SOUTH FLORIDA

WATER MANAGEMENT DISTRICT

BIG CYPRESS BASIN

FIVE YEAR PLAN -- 2002-2006

A. Adopted – January 25, 2002

FIVE YEAR PLAN -- 2002-2006

FOR THE

BIG CYPRESS BASIN

OF THE

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

ACCEPTED BY THE BIG CYPRESS BASIN BOARD
AT ITS REGULAR MEETING ON JANUARY 25, 2002

BIG CYPRESS BASIN BOARD MEMBERS:

Trudi K. Williams, Chairman ex officio
Mary Ellen Hawkins, Vice Chair
Patricia Carroll, Secretary
Alicia Abbott, Member
Garrett S. Richter, Member
Fred N. Thomas, Jr., Member

Clarence S. Tears, Jr., Director, Big Cypress Basin

Big Cypress Basin Five Year Plan
2000-2004

Table of Contents

1. Introduction

This update of the Big Cypress Basin Five Year Plan has been formulated to reevaluate the Big Cypress Basin's ongoing action plans and programs, and to develop new programs for the 2002 – 2006 period to fulfill the Basin's statutory missions. The primary functions of this process are to:

1. Identify and prioritize the Basin's objectives.
2. Outline and define specific programs for accomplishing the objectives.
3. Estimate costs for funding and implementing the programs.
4. Prepare a schedule for program implementation.

Since its inception in 1977 the Big Cypress Basin has formulated a series of Five Year Plans to define and outline plans for achieving its broad range of water management objectives. Proper resource planning guidelines require that the programs and schedules be reviewed periodically to assess the progress and additions and amendments can be made accordingly. Particularly, due to the rapid growth of the region during the last two decades and the accompanying new vistas of emerging issues/concerns related to water supply, flood protection, water quality and natural ecosystems, it is necessary that the programs be reevaluated on a regular cycle. Other important factors such as limitations in the availability of resources to carry out the plans, and often, changes or unavoidable delays in implementation of programs necessitate review and reprioritizations. Such review will enable the Basin and the public to determine the effectiveness of plan formulation and implementation, and provide direction for future projects.

The Five Year Plan for the 2002-2006 period reflect changing needs and priorities in the Basin. Some of these changing needs that influenced reassessment of the priorities of capital projects planning and construction set forth in the earlier Five Year Plan are the recurrent droughts in Southwest Florida, flooding in the North Naples - Bonita Springs area, and three ecosystem restoration projects undertaken for implementation by the Basin. Implementation of the restoration plans for Lake Trafford and Tamiami Trail Flow Enhancement projects is being sponsored by a co-operative agreement with the U.S. Army Corps of Engineers (COE) under the funding initiative of the Water Resources Development Act (WRDA) of 1996. A third project - Hydrologic Restoration of Southern Golden Gate Estates (SGGE) has been included as an element of the Comprehensive Everglades Restoration Program (CERP).

The Basin has recognized the implementation of these restoration projects as the primary local non-federal sponsor. The local share of funding for the projects needs to be accommodated into the Basin planning and budgets for the next five years. Accordingly, the 2000-2004 Five Year Plan adopted by the Basin Board on January 2, 2000 has been revised by this update to incorporate such urgently needed projects to protect and enhance the water and environmental resources of the Basin.

II. Planning Update

Existing and Proposed Big Cypress Basin Programs

Program Objectives

The major programs presently carried out by the Basin were designed solely for the purpose of fulfilling the primary missions of the Basin to manage water resources for the public's health, safety and welfare. The elements of these missions are flood control, enhancement of water supply, water quality, and environmental protection. The basic framework of the missions was instituted in conformity with the policies and objectives of the parent District while addressing the local resource needs. The salient objectives of the mission statement are listed herein to emphasize their significance. They are:

1. Identify, qualitatively and quantitatively, water resources available in the Basin.
2. Develop plans for conservation, preservation and development of water resources.
3. Conduct efficient operation and maintenance activities upon existing Basin water management facilities.
4. Undertake construction of Basin works to facilitate water resource management.
5. Assist other public entities' efforts in management of water resources in the Basin.

6. Educate the public on water resource issues, including student and adult programs and policies to generate awareness of water conservation and protection of the environmental resources of the region.

The foregoing statements will continue to form the core of the objective functions of the Basin to carry out its statutory duties such as preparing an annual budget, tracking compliance and progress in carrying out its mission.

Existing Programs

Within the framework of the statutory responsibilities and objectives of fulfilling the primary missions of the District for enhancement of water supply, flood control, environmental protection, and water quality protection, the following set of specific program activities were initiated and are presently being carried out by the Basin.

1. Management of Basin Affairs
2. Basin Works Acquisition and Administration
3. Hydromonitoring and Operation
4. Water Management Planning
5. Construction
6. Operations and Maintenance
7. Local Government Assistance/Cooperation
8. Water Conservation Education/Public Awareness Program

The thrust of existing activities and those proposed during the 2002-2006 planning period under each of the above programs are discussed in the following sections.

1. Management of Basin Affairs

The overall administration of all programs and activities in the Basin are performed under the auspices of this program. This includes preparation of the annual operating budget for submission to the Basin Board and the District Governing Board, coordination/liaison with various levels of government and public at large, and all other miscellaneous functions. Meetings of the Basin Board are held regularly at which time the Board directs the business affairs of the Basin. Public input and concerns are considered, policies are established, programs of implementation are set forth, budgets developed and directives are issued to the staff for execution of the specific program functions. All meetings are open to the public and provide a forum for matters relating to the region's water management and specific resource problems.

Programs outlined in the previous five year plans have been expanded and shifted to address the changing needs of the Basin. The rapid growth of Collier County during the last decade, with increased population and accompanying urban and agricultural developments has stimulated significant concerns regarding efficient management of the water and environmental resources of the region. The resulting increased responsibilities for planning, construction, operation and maintenance of additional facilities, and innovative water resource management strategies require that this program be maintained to efficiently provide the services necessary to meet the resource management needs of the Basin. Additional staff needs will be considered and reviewed during the annual budget process of the oncoming five year planning cycle.

2. Basin Works Acquisition and Administration

As per provisions of Section 373.0695(3), Florida statutes, the BCBB is authorized to adopt water conveyance and control facilities as "Works of the Basin." Presently the Basin has the responsibility for operating, maintaining, and providing planning and capital improvement to a network of 169 miles of primary canals and 42 water control structures. The primary activities of the Basin Works Acquisition and Administration Program include:

(1) Identification of proposed works

(2) Inter-agency coordination

(3) Engineering inspections and surveys

(4) Acquisition of property interests

(5) Administrative actions related to the proposed works.

In this context, it will be appropriate to provide a brief chronological account of the Basin Works Acquisition Program. Soon after its organization in 1977, the Basin Board determined that the proper maintenance of the water control structures in the major or primary drainage system would address the broad objectives of conservation, preservation, and enhancement of the water resources of the region. Accordingly, an agreement was entered into between Collier County and the District/Basin Boards which transferred operation and maintenance responsibilities of 20 water control structures to the Basin in 1979. In the interim period between 1979 and 1986, six additional water control structures were adopted as "Works of the Basin." Subsequently, by an agreement in 1986, the Basin's role in operation and maintenance was extended to cover the entire primary drainage system in the county. In accordance with this agreement, during the FY

1986-1991 period, operation and maintenance responsibilities of 106 miles of primary canal segments were adopted as "Works of the Basin" in phases.

In 1990, the Collier County Board of County Commissioners and the Basin Board jointly agreed to redefine the primary system of canals and water control structures in order to optimize stormwater management capital improvements, and operation and maintenance functions between the County and the Basin. According to the provisions of this redefinition, a new 10-year agreement between the two entities was signed on February 19, 1991. By virtue of this agreement, some of the "works" adopted under the 1979 and 1986 agreements, namely the Harvey, and Pine Ridge Canals, and the water control structures on these canals, in addition to structures on the Gordon River, Haldeman Creek, East and West Branches of the Cocohatchee, and Eagle Creek were redefined as secondary water control facilities, and were returned to the County. This agreement also provided for adoption of another 27 miles of primary canals and three water control structures.

Subsequently, an amendment to the February 1991 agreement was made on June 1, 1993 by transferring responsibility from Collier County to the Basin for the control and operation and maintenance of an additional 30 miles of canals and one water control structure effective October 1, 1993. The primary system of canals and water control structures that are presently "Works of the Basin" as of January 1, 2002 are illustrated in Table 1 and Figure 1. The 10-year term of the 1991 agreement between the Basin and Collier County expired on February 28, 2001 and an extension to the agreement has been signed to extend the term to February 28, 2011. The existing mechanism of division of operation of the primary and secondary waterways between the Basin and the County has

been found to be extremely effective in managing the regional water resources. It is recommended that the Board of County Commissioners and the Basin Board continue this partnership for the greater benefit of the residents of Collier County.

Recent Congressional authorization extended the westerly boundary of the Big Cypress National Preserve to the rights of way limits of SR 29. The Preserve officials have indicated the intention of handing over the operations and maintenance responsibility of the SR 29 Canal (Barron River Canal) to the Big Cypress Basin. In addition to conducting the operations and maintenance functions of the ten water control structures on this canal, the Basin staff has often been providing mechanical and chemical weed control for the canal segment between I-75 and U.S. 41. The Florida DOT has transferred the drainage easement of a six-mile reach of the canal just south of I-75 and this portion of the canal has been adopted as “Works of the Basin” in 2001. It is recommended that the Basin Board consider adoption of the remaining primary sections of SR 29 Canal as "Works of the Basin" in the near future. An effective operations and maintenance plan will be mutually developed by the Big Cypress Basin and the Big Cypress National Preserve staff for operation of the canal and water control structures subsequent to adoption of the canal.

In addition to the aforementioned waterways and water control structures, the Basin presently performs operation and maintenance activities for aquatic weed control at Lake Trafford. The Basin has been actively participating with the Lake Trafford Restoration Task Force to improve the water quality of the lake from its present eutrophic state. Due to the importance of the lake for being at the headwaters of the BCB watershed and functioning as a valuable regional eco-tourism resource, the Basin will

continue to perform aquatic weed management and other maintenance activities in the lake.

Table 1
Existing "Works of the Basin"
January 1, 2002

Canals	Miles	Acres
1. Golden Gate Main Canal	27.25	
2. Golden Gate Main Side Branch	2.00	
3. I-75 Canal	7.00	
4. Airport Road Canal	7.25	
5. Faka Union Canal	29.50	
6. Miller Canal	18.75	
7. Cypress Canal	8.00	
8. Merritt Canal	12.00	
9. Prairie Canal	10.00	
10. Henderson Creek Canal	6.75	
11. Cocohatchee Canal	12.00	
12. S.R. 29 Canal	6.00	
13. CR 951 Canal	7.25	
14. Corkscrew Canal and its Side Branches	6.25	
15. Curry Canal	2.00	
16. Green Canal	3.00	
17. Orangetree Canal	2.25	
18. C-1 Connector Canal	1.75	
19. Lake Trafford		1,600
TOTAL MILES OF CANALS	169.00	

Table 1 (continued)
Existing "Works of the Basin"

Water Control Structures

1. Golden Gate Canal Weir No. 1
2. Golden Gate Canal Weir No. 2
3. Golden Gate Canal Weir No. 3
4. Golden Gate Canal Weir No. 4
5. Golden Gate Canal Weir No. 5
6. Golden Gate Canal Weir No. 6
7. Golden Gate Canal Weir No. 7
8. I-75 Canal Weir No. 1
9. I-75 Canal Weir No. 2
10. I-75 Canal Weir No. 3
11. Cypress Canal Weir No. 1 (4A-1)
12. Airport Road Canal North Amil Gate
13. Airport Road Canal South Amil Gate
14. Faka Union Canal Weir No. 1
15. Faka Union Canal Weir No. 2
16. Faka Union Canal Weir No. 3
17. Faka Union Canal Weir No. 4
18. Faka Union Canal Weir No. 5
19. Faka Union Canal Weir No. 6
20. Faka Union Canal Weir No. 7
21. Miller Canal Weir No. 1
22. Miller Canal Weir No. 2
23. Miller Canal Weir No. 3
24. Merritt Canal Weir No. 1
25. Prairie Canal Weir No. 1
26. S.R. 29 Canal Weir No. 1
27. S.R. 29 Canal Weir No. 2
28. S.R. 29 Canal Weir No. 3
29. S.R. 29 Canal Weir No. 4
30. S.R. 29 Canal Weir No. 5
31. S.R. 29 Canal Weir No. 6
32. S.R. 29 Canal Weir No. 7
33. S.R. 29 Canal Weir No. 8
34. Henderson Creek Weir No. 1
35. Cocohatchee Canal Weir No. 1
36. Cocohatchee Canal Weir No. 2
37. S.R. 29 Canal Weir No. 6A
38. S.R. 29 Canal Weir No. 6B
39. Cocohatchee Canal Weir No. 3
40. Lucky Lake Water Control Structure
41. Corkscrew No. 2
42. Corkscrew No. 3

TOTAL: 42 Structures

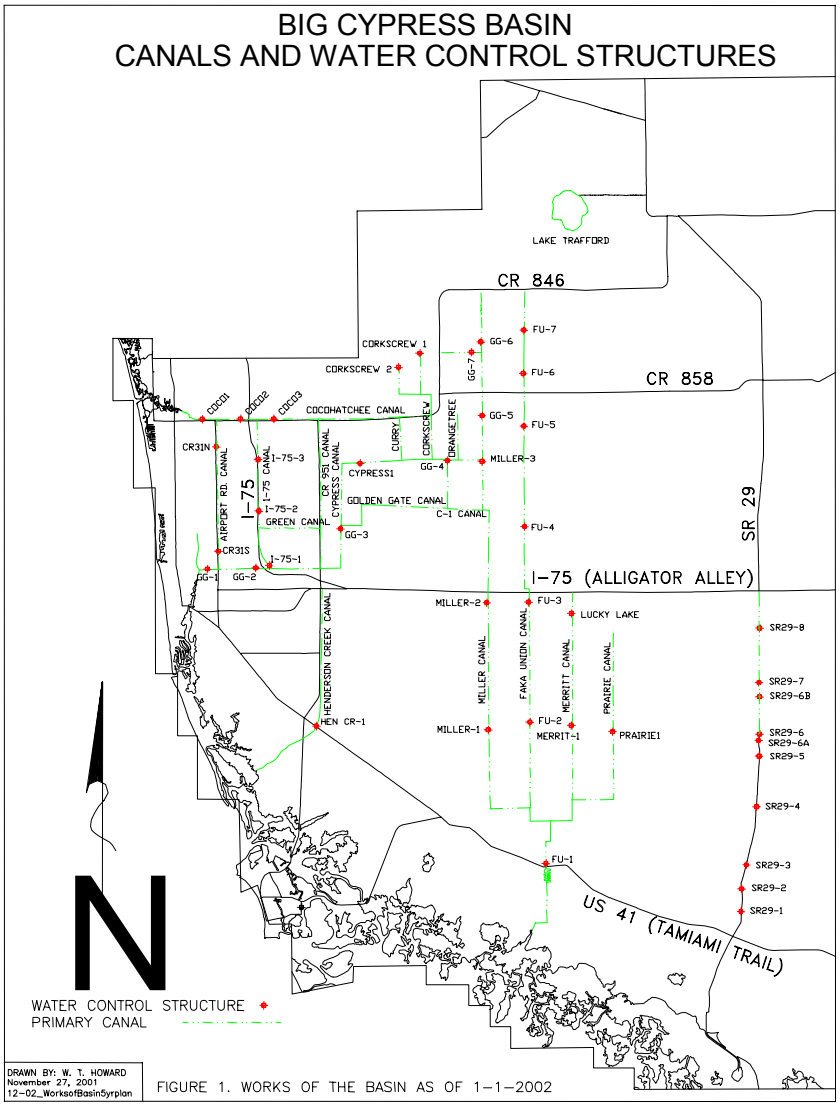


FIGURE 1. WORKS OF THE BASIN AS OF 1-1-2002

3. Hydrologic Monitoring and Operation

Program Overview

Since its inception, the Big Cypress Basin has undertaken an extensive hydrologic monitoring program to collect continuous data on rainfall, evaporation, surface and groundwater levels, streamflow and water quality. Presently the Basin's monitoring network includes 67 stations, with data collected at 8 of these stations through cooperation of several public agencies and private volunteers (Table 2). The data collected by the Basin's hydrologic monitoring and operation network is processed for storage and retrieval at the District's Data Management Division computing facility.

Recent introduction of the telemetry system known as DMS/LoggerNet has resulted in numerous changes to the hydrologic monitoring and operation program. These changes are the direct result of the DMS/LoggerNet software evolution for real time remote data acquisition and monitoring. The program has now been expanded to include parameters for electronic control with the ability for remote supervisory operation of water control facilities. The staff is presently developing web-based public access to real time data readings at all active telemetry sites within the Basin. A meta-database of all research and monitoring activities of the Basin is also located at Florida Gulf Coast University computing facility. This database is an index of all monitoring stations, and is publicly accessible on the world wide web address: http://library.fgcu.edu/big_cypress.

The availability of telemetric real time hydrologic monitoring and operation data continues to improve response time for Basin staff to changing hydrologic conditions, and enhances the Basin's ability to meet the public's needs during storm events and drought conditions. As advancements in telemetric hydrologic monitoring and operation

technologies progress, the Basin will continue to work toward application of new technologies to the hydrologic monitoring and operation network for efficient planning and management of the regional water resources.

Table 2
Big Cypress Basin
Hydrologic Monitoring and Operation Network Stations

	STATION NAME	MONITORED PARAMETERS										
		Stage	Head Water	Tail Water	Rainfall	Gates	Wells	Water Quality	Evap.	Temp.	Wind Speed & Direction	Supervisory Control
1	Gordon River		X	X								
2	Golden Gate Weir # 1		X									
3	Golden Gate Weir # 2		X									
4	Golden Gate Weir # 3		X	X								
5	Golden Gate Weir # 4		X									
6	Golden Gate Weir # 5		X									
7	I-75 Weir # 1		X	X								
8	I-75 Weir #2		X									
9	CR 31 South		X	X								
10	Golden Gate Canal @ CR 951	X										
11	Henderson Creek near SR 84	X										
12	Henderson Creek Weir # 1		X	X		X						X
13	Henderson Creek East		X									
14	Haldeman Creek		X	X								
15	Lely Canal @ US 41	X										
16	Eagle Creek @ B.F.W. Road		X									
17	Tamiami Canal @ Tomato Road	X										
18	Tamiami Canal @ Bridge 37	X										
19	Tamiami Canal @ Bridge 52	X										
20	Tamiami Canal @ Bridge 55	X										
21	Faka Union Weir # 1		X	X								
22	Faka Union Weir # 4		X									
23	Cypress Canal @ Weir 4A-1		X									
24	Miller Canal @ 26th Ave. SE	X										
25	Camp Keais Strand @ CR 858	X										
26	Camp Keais Strand @ CR 846	X										
27	Okaloacoochee Slough @ SR 29	X										
28	Okaloacoochee Slough @ CR 858	X										
29	Corkscrew Canal @ CR 846	X										
30	Cocohatchee Canal @ CR 951	X										
31	Palm River @ Palm River Blvd.	X										
32	Pine Ridge Canal @ CR 846		X									
33	West Br. Cocohatchee @ CR 846		X									
34	East Br. Cocohatchee @ CR 846		X									
35	Cocohatchee Canal Weir # 1		X	X	X	X						

	STATION NAME	MONITORED PARAMETERS										
		Stage	Head Water	Tail Water	Rainfall	Gates	Wells	Water Quality	Evap.	Temp.	Wind Speed & Direction	Supervisory Control
36	Cocohatchee Canal @ Weir # 2		X	X		X						
37	Cocohatchee Canal @ Weir # 3		X	X		X						
38	Corkscrew Swamp Sanctuary North	X			X							
39	Corkscrew Swamp Sanctuary HQ				X							
40	Lucky Lake Weir		X	X								
41	Lucky Lake East						X					
42	Lucky Lake West						X					
43	CR 951 Extension	X			X							
44	BCB Field Station				X				X	X		
45	Golden Gate Fire Sta. # 2				X							
46	N. Naples Fire Sta. # 42				X							
47	Collier County Courthouse				X							
48	Eastern GG Estates near I-75				X							
49	Collier / Seminole State Park				X							
50	Fakahatchee Strand North				X							
51	Fakahatchee Strand HQ				X				X			
52	Fakahatchee Strand @ Dan House				X							
53	Bonita Springs Utilities				X							
54	IFAS @ Immokalee				X				X	X	X	
55	Immokalee Landfill				X							
56	Silver Strand				X				X	X	X	
57	Miles City Forestry Tower				X							
58	The Conservancy				X							
59	Collier County Landfill				X							
60	Marco Island Water Plant				X							
61	Big Corkscrew Fire Sta. # 10				X							
62	Big Corkscrew Fire Sta. # 11				X							
63	Rookery Bay HQ				X							
64	Lake Trafford							X				
65	Miller Canal @ I-75	X										
66	Merritt Canal @ I-75	X										
67	Faka Union Canal @ I-75	X										

Proposed Program Implementation Plan

As the population of Collier County continues to grow, the need to provide flood protection while protecting the public water supply and environmental quality will continue to increase. Increased demands on the regional water resources in concurrence with the local CERP and Critical Restoration Projects for Hydrologic Restoration of Southern Golden Gate Estates, Tamiami Trail Flow Enhancement and Lake Trafford Restoration necessitate the expansion of the hydrologic monitoring and operation network. The expanded network's first obligation will be to monitor and provide data as required in the plans for the local CERP and Critical Restoration Projects. Secondly this data will enhance the continuing development of future local and regional plans for water use and supply, flood routing and environmental assessment.

The expanded number of monitoring sites, parameters monitored and devices used will necessitate that a full time position be staffed at BCB in Fiscal Year 2003. This position will be responsible for maintaining all aspects of the monitoring network in continuous working order with minimum down time for any monitoring or operational site due to equipment failure or vandalism. The proposed implementation plan for the Big Cypress Basin telemetric hydrologic monitoring and operation network project for existing and proposed sites are categorized under the following headings:

3a. Telemetry Infrastructure

All monitoring stations with the exception of those for water quality will be placed on the existing DMS/LoggerNet telemetry system within the next 5 years. The

purchase of the items listed in the table below along with placement of a full time telemetric network administrator at BCB will be necessary.

Project	Fiscal Year				
	02	03	04	05	06
Acquire dedicated DMS/LoggerNet server compatible with rack server system that will replace the current BCB server in FY 01 and convert existing DMS/LoggerNet server		X			
Install dedicated communication tower for DMS/LoggerNet at BCB administration building		X			
Migrate existing DMS/LoggerNet Server to BCB administration building		X			
Purchase necessary DMS/LoggerNet software & licenses		X			
Apply to FCC for dedicated radio frequency licenses for hydrologic operation and monitoring telemetric network	X				
Receive from FCC dedicated radio frequency license for hydrologic operation and monitoring telemetric network				X	
Acquire Senior Monitoring and Operation Network Position to be assigned to the Big Cypress Basin		X			

3b. Meteorological Data Stations Modernization

The network of meteorologic stations is proposed to be equipped with telemetric operation according to the following schedule. In the table below the stations marked with an * are included as part of the CERP or Critical Restoration Projects and required be in place within the noted fiscal year to provide pre and post restoration data.

Project Sites Note: * indicates CERP / Critical Restoration Projects	Fiscal Year				
	02	03	04	05	06
* SGGE Weather Station	X				
Rookery Bay HQ	X				
Marco Island Water Treatment Plant	X				
Conservancy of Naples	X				
Cocohatchee Weir #1	X				
* Fakahatchee Strand South (Dan House Prairie)	X				
Golden Gate Fire Station #2	X				
Collier County Landfill		X			
* Fakahatchee Strand HQ	X				
* Fakahatchee Strand North		X			
Big Corkscrew Fire Sta. #10		X			
* Collier / Seminole State Park		X			
N. Naples Fire Station #42		X			
Big Corkscrew Fire Sta. #11			X		
Bonita Springs Water Plant			X		
Miles City State Forestry Tower			X		

3c. Surface Water Hydrologic Data Stations

The network of hydrologic data stations is proposed to be modernized according to the flowing schedule. All stations in FY02, FY03 and FY04 are to be installed or modernized and placed on telemetry as part of the required monitoring network for the Hydrologic Restoration of Southern Golden Gate Estates, Tamiami Trail Flow Enhancement and Lake Trafford Critical Restoration Projects. The critical sites marked by an * in the table below should be in place to establish the pre-restoration conditions which will be the benchmark against which the success of the restoration efforts will be measured.

Project Sites Note: * indicates CERP / Critical Restoration Projects	Fiscal Year				
	02	03	04	05	06
Golden Gate Weir # 3	X				
Golden Gate Weir # 4	X				
Cypress Canal Weir 4A-1	X				
Okaloacoochee Slough at CR 858	X				
Okaloacoochee Slough at SR 29	X				
I-75 Weir #2 (D2-8)	X				
Gordon River	X				
* Faka Union Canal Weir #1	X				
Camp Keais at CR 846	X				
CR 31 South replacement structure	X				
Golden Gate Weir # 6	X				
SR 29 Canal Weir # 6A	X				
SR 29 Canal at Panther Crossing Outlet	X				
* Tamiami Canal Bridge # 37		X			
Haldeman Creek (Amil Gate)		X			
*Tamiami Canal Bridge # 52			X		
* Tamiami Canal Bridge # 55			X		
Miller Canal at 26th Ave. SE			X		
Eagle Creek at Bare Foot Williams Road			X		
Faka Union Canal Weir # 5 to coincide with construction	X				
Faka Union Canal Weir # 4 to coincide with construction		X			
Corkscrew Canal Weir # 2		X			
Corkscrew Canal Weir # 3		X			
* Tamiami Canal Bridge # 40		X			
* Tamiami Canal Bridge # 45		X			
* Tamiami Canal Bridge # 145		X			
* Tamiami Canal Bridge # 146		X			
* Tamiami Canal Bridge # 66		X			
* Tamiami Canal Bridge # 71		X			
SR 29 Canal @ Sunniland Weir				X	
SR 29 Canal @ Owl Hammock				X	
I-75 at Bridge # 030229				X	
* 2 Paired Sites along I-75 from Toll Plaza to Miller Canal				X	
* 2 Sites Downstream of Lake Trafford	X				
* 2 Sites Northeast of Lake Trafford	X				
* 2 Sites @ Tributaries near Lake Trafford	X				
* 2 Sites on Sloughs South of Immokalee, Draining to Lake Trafford	X				

3d. Ground Water Hydrogeologic Data

As part of the monitoring requirements for the CERP and Critical Restoration Projects approximately 30 aquifer monitoring wells must be drilled within the next three years. These wells will not only provide data for pre and post restoration effects but also data for future watershed planning.

Project Sites Note: * indicates CERP / Critical Restoration Projects	Fiscal Year				
	02	03	04	05	06
* Lucky Lake East		X			
* Lucky Lake West		X			
Rattlesnake Hammock @ CR 951			X		
Cocohatchee Canal @ CR 951			X		
* SGGE Six Well Transect North of Spreader Channel		X			
* SGGE Six Well Transect South of Spreader Channel		X			
* SGGE Six Well Transect Ext. FSSP North Transect		X			
* SGGE Six Well Transect Ext. FSSP South Transect		X			
* 6 Aquifer Monitoring Wells Around Lake Trafford		X			

3e. Water Control Structure Data

Monitoring of gate operational data with electronic and supervisory control ability is being installed as improvements to the current operational systems to the existing structures in the table below. Electronic control, monitoring and supervisory control are to be included as part of the design of new and replacement structures being planned under the Basin's Capital Improvement Projects. Supervisory control is included as part of the software package for electronic control of the structures and is not intended as the primary control.

Project Sites Note: * Indicates CERP / Critical Restoration Projects	Fiscal Year				
	02	03	04	05	06
Henderson Creek Weir # 1	X				
Cocohatchee Canal Weir # 1	X				
Cocohatchee Canal Weir # 2	X				
Cocohatchee Canal Weir # 3	X				
Golden Gate Weir # 1 Note: Installation to coincide with construction		X			
Faka Union Canal Weir # 4 Note: Note: Installation to coincide with construction		X			
Faka Union Canal Weir # 5 Note: Note: Installation to coincide with construction	X				
* SGGE Restoration Proj. Pump Stations			X		
Airport Road South Retrofit			X		
Miller Weir # 3 Improvements			X		

3f. Water Quality Data

Existing Program

The Basin Board sponsors a surface water quality monitoring program which is conducted by the Collier County Pollution Control Department (CCPCD) and Florida International University (FIU). CCPCD collects water samples monthly at 43 locations in the freshwater canal system and FIU collects water quality data at 35 sites in the estuaries. Other water quality data have been collected as part of various studies conducted by other agencies in the region. The Basin participates in the Southwest Florida Water Quality Consortium whose goal is to improve resource management decisions by creating a shared water quality monitoring database.

Proposed Program

An overall assessment of the water quality characteristics of the waterways and the estuaries will be completed to provide a baseline for evaluating the effectiveness of current and future water management plans for improving the water resources of the Basin. It is recommended that the existing cooperative agreements with CCPCD and FIU specified under contracts C-12250 and C-10244 be continued in each year of the next five-year planning cycle.

Additional water quality sample collection and analysis is recommended as part of the South Golden Gate Estates Hydrologic Restoration Project to conform to the Restoration Coordination and Verification (RECOVER) process. RECOVER was developed to ensure that the restoration project meets the project objectives defined in the CERP project management plan. As part of RECOVER, five additional stations are recommended for the SGGE and additional stations are recommended for the upstream

locations of Blackwater, Faka Union, Fakahatchee, and Pumpkin Bays. The data from these sites will document the success of the SGGE project and changes in the estuary water quality of neighboring bays.

As part of the FDEP permit for the Lake Trafford Restoration Project, the Basin is required to develop a watershed management plan. Three additional water quality grab sample sites will be added to the Collier County surface water quality monitoring program to evaluate the long-term effectiveness of the watershed management plan.

Nutrient load management is an important component of the watershed management. As the land use intensifies in the Basin it will be necessary to monitor and manage the nutrient loads to the estuary more carefully to avoid degradation of the estuarine habitat. This requires a comprehensive calculation of nutrient loads in the canal system and the estuary. The analysis of nutrient loads has three components: 1) a nutrient budget will be developed for each drainage basin, 2) the data collected from the monitoring program will be used to calculate nutrient loads to the estuary, and 3) a water quality model will be developed for the basin using the Mike11/MikeSHE hydrologic simulation model that has been developed for the BCB Watershed Management Plan.

4. Water Management Planning

Section 373.0695(1)(a), Florida Statutes specifically defines one of the primary responsibilities of the Basin as "preparation of engineering plans for development of the water resources of the Basin and the conduct of public hearings on such plans." In addition to development of plans for "primary works," this statute specifies that Basin funds can also be utilized for preparation of overall Basin plans of secondary water control facilities for the guidance of subdrainage districts and private owners who wish to connect their water control systems to the primary “Works of the Basin” to make use of the engineering plans of the primary works. Chapter 373, Florida Statutes also provides for proper planning and management of water and related land resources, for flood protection, reduction of excessive drainage and soil erosion, and provides the basis for the development of regulating criteria for management of surface and groundwater resources of the Basin.

During the last 24 years, the Basin took an aggressive role in conducting detailed inventories and evaluating the resources of the region for developing preliminary water management plans for a number of basins. In addition to the specific Basin studies, numerous planning studies were performed in connection with the feasibility analyses and preliminary engineering evaluation of the capital improvement projects of the Basin works. Most of the recommended plans from these studies have been implemented. In some cases, however, more detailed analysis, including incorporation of detailed topographic mapping, are needed to develop implementable engineering plans. Also, in some cases there existed public apathy to the course of action that resulted in the delay of

implementation of the plans. In other cases, the recommendations could not be implemented due to questions raised about the effects on the environment that necessitated additional analysis.

New statutory provisions of Section 17-40 of Florida Administrative Code, the Florida Department of Environmental Protection requires the Water Management Districts to develop watershed management goals for all watersheds within the boundaries of each District. As per the requirements of the subject Water Policy document, these goals shall be considered in local comprehensive plans submitted or updated in accordance with Section 403.0891(3)(a), Florida Statutes.

Part V, Section 17-40.501, Florida Administrative Code requires:

1. The District Plan shall include an assessment of water needs and sources for the next 20 years. The District Plan shall identify specific geographical areas that have water resource problems which have become critical or are anticipated to become critical within the next 20 years. Identification of critical water supply problem areas needed for imposition of reuse requirements pursuant to rule 17-40.401(5), Florida Administrative Code, may be accomplished before publication of the complete District Plan.

2. Based on economic, environmental, and technical feasibility analyses, a course of remedial or preventive action shall be specified for each current and anticipated future critical problem.

3. Remedial or preventive measures may include, but are not limited to, water resource projects; water resources restoration projects pursuant to Section 403.0615, Florida Statutes; purchase of lands; conservation of water; reuse of reclaimed

water; enforcement of Department or District rules; and actions taken by local government pursuant to a Local Government Comprehensive Plan, local ordinance, or zoning regulation.

4. District Plans shall also provide for identifying areas where collection of data, water resource investigations water resource projects, or the implementation of regulatory programs are necessary to prevent water resource problems from becoming critical.

5. At a minimum, District Plans shall be updated every five years after the initial plan development.

In view of such continuing changes in the responsibilities of the Basin, the resource planning efforts identified in the 2000-2004 Five Year Plan have been reevaluated and reprioritized, and the following schedule of water management planning efforts are outlined for the 2002-2006 period.

A. Big Cypress Basin Watershed Management Plan (BCBWMP)

With the evolution of urban and agricultural development the traditional surface water flow patterns in the western Collier County region have undergone drastic changes. Historic flowways have been virtually eliminated, and drainage canals, in many cases, have resulted in haphazard transfer of runoff from one basin to another with too much water in one place and too little in another. Many of the recent water management problems related to flooding, water supply, and environmental degradation emerge from such 'ditch and drain' strategies. Some of the impacts can possibly be minimized or reversed by restoring and reassembling the historic surface water flow characteristics of the region.

The Basin Board has presently sponsored a study to conduct a comprehensive evaluation of the surface water flow characteristics of the western Collier County region as a singular watershed system, and to develop a set of regional routing models as a tool for evaluating alternatives for improved water management strategies. The primary goal of the project is to develop effective management of water and related land resources of the region to achieve the following objectives:

- restore historic surface water flow characteristics
- maintain or improve existing levels of flood protection in the developed and developing areas
- improve water retention and aquifer recharge potential
- support the long-term viability of potable and agricultural water supplies
- reduce threats of saltwater intrusion
- reduce excessive freshwater discharge impacts on downstream estuaries
- enhance natural system functions and values on publicly owned lands
- establish outflow control elevations for water management facilities throughout the Big Cypress Basin Watershed.

The first two phases of this project i.e., development of a hydrologic-hydraulic model and ecologic assessment methodology have been completed. An assessment of the hydrologic-hydraulic capacities of BCB facilities has been performed and conceptual alternatives have been evaluated. A preliminary flood control plan has been formulated after comparative evaluation of alternatives. Continued efforts in the BCBWMP will involve the application of integrated surface and groundwater model presently being

developed as a comprehensive modeling tool to evaluate the entire realm of watershed processes.

The plan so developed should be the guide map of future capital projects as well as operation and maintenance activities in the Basin and provide the basis for offsite mitigation opportunities as a means of assisting in the implementation of the above.

B. Southern Golden Gate Estates Restoration Plan

The Southern Golden Gate Estates (SGGE) encompasses an approximately 94-square mile area in western Collier County, south of I-75, between the Fakahatchee Strand and the Belle Meade watershed. It is an important surface storage and aquifer recharge area and serves as the headwaters of the central portion of the Ten Thousand Islands estuary. Construction of road and drainage improvements in the 1960s and 1970s have overdrained the area, allowing invasion of upland vegetation, wildfires, reduced aquifer storage and increased freshwater shock loads to the estuary.

The area was identified in 1985 as a component of the Governor of Florida's Save Our Everglades program. An active land acquisition program has been in operation under the State's Conservation and Recreational Land (CARL) acquisition program initiative with substantial additional funding obtained from the Federal Farm Bill grant through the U.S. Department of Interior. It is necessary to acquire all of the SGGE lands under public ownership so that effective restoration measures can be implemented. In 1996 the Basin completed development of a conceptual hydrologic restoration plan at the directive of the Governor of Florida. Additional technical studies involving data collection on soils, vegetation, topography, canal cross-sections and water table elevations were performed under a cooperative watershed planning assistance agreement

with the U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS). The updated information is being utilized in fine-tuning the H&H models and ecologic assessment of the project features.

The project is being implemented as an element of the Comprehensive Everglades Restoration Plan (CERP) in cooperation with The Corps of Engineers. A Project Management Plan Agreement has been signed jointly by the SFWMD Executive Director and the Deputy District Engineer of COE. A Project Implementation Report is being written for congressional authorization of the project under the Water Resources Development Act of 2002. The future planning work for this project will involve incorporating the updated hydrologic and ecologic database and the models to fine-tune the project design features restoration plan in an economically feasible and environmentally sound manner.

C. Corkscrew and Curry Canal System Water Management Plan

The Corkscrew Canal and its side ditches including the Curry Canal comprise a dendritic network of poorly drained canals that provides an interbasin transfer of water from the Corkscrew-Cocohatchee Basin to Golden Gate Canal Basin. Virtually uncontrolled flows through these canals have led to overdrainage of portions of the Bird Rookery Swamp ecosystem and loss of dry season surface and shallow aquifer storage. The flood control capacity of these canals is also limited, as was evident during the recent wet seasons of 1991, 1992, 1995, and 2001. Recently two water control structures have been constructed in cooperation with Collier County by utilizing wetlands mitigation funds from the Livingston Road construction project. In FY02 additional drainage improvement work, including replacement of six undersized culverts is being coordinated

with Collier County. It has been proposed to perform additional hydrologic-hydraulic analysis for evaluating the flood control and overdrainage mitigation elements of the canal system in early FY 2002.

D. C-1 Connector Canal and Miller Canal Weir No. 3 Modification

Presently a somewhat disjointed lateral canal segment known as the C-1 Connector links the Golden Gate Main Canal with Miller Canal at a location approximately one mile south of Golden Gate Boulevard. The canal was not completely excavated to accommodate flow conveyance capability. Due to its strategic linkage between the Golden Gate and Faka Union Canal Systems this canal can provide important water management features for relief of floodwater as well as for groundwater recharge avenues to the adjacent wellfields of the City of Naples and Collier County Utilities if it is equipped with adequate water control measures.

It is proposed that the detailed hydraulic analysis be performed for an inter-basin connecting network and plans for more efficient water management at this linkage be developed in FY 2003. Preliminary engineering surveys for this planning effort have been completed.

E. Rehabilitation of Faka Union Canal Weir No. 4

The Faka Union Canal Weir No. 4 provides important water control functions for groundwater recharge to the adjoining Eastern Golden Gate Estates wellfield of the City of Naples Water Utility. It was constructed approximately 30 years ago as a V-notch weir. In 1983, the Board of Collier County Commissioners added provisions for water storage with stop log operation. The stop logs were not leak proof and were susceptible

to continual vandalization. In 1992, the Big Cypress Basin Operations and Maintenance staff modified the structure by replacing the stop logs with winch-operable steel gates.

Due to strategic importance of this aging structure in preserving the yield of the wellfield, it is necessary that a complete retrofit be performed in the near future. It is proposed to perform detailed hydrologic-hydraulic planning for retrofit of the structure in FY 2002.

F. Golden Gate Canal/Henderson Creek Diversion Plan

The historic flowways of the Henderson Creek have been disrupted by nearly 50 years of road and drainage development. Some of these flows have been intercepted by the Golden Gate Canal and others have been disrupted, leading to flooding in low lying areas encroached by development and adverse environmental impact to the estuaries of Naples Bay and Rookery Bay.

One of the key objectives of the Big Cypress Basin Watershed Management Plan (BCBWMP) is to restore this important flowway in order to reduce flooding and minimize adverse impacts to the estuaries. Accordingly, the BCBWMP has considered one water management strategy to divert a portion of the peak flows from the Golden Gate Canal to the Henderson Creek Canal. The implementation of this plan will involve construction of a diversion channel that will convey flow from the Golden Gate Main Canal segment east of CR 951 through a culvert under I-75, southward to the Henderson Creek Canal.

The Basin Staff is presently coordinating with a land developer to route the flow through the surface water management systems of the proposed development for eventual

discharge to the lower reaches of Henderson Creek Canal. A detailed water management plan for this project is proposed to be undertaken in FY 2002.

G. Camp Keais Strand Flowway Restoration

The Camp Keais Strand is a large natural slough conveying water from south of Lake Trafford to the Florida Panther National Wildlife Refuge and downstream ecosystem of SGGE and Fakahatchee Strand. Encroachment to the flowway by agricultural developments and road construction have adversely impacted its historic flow pattern. In addition to adversely impacting the ecosystem by such disruption of flow, the flood conveyance capacity of the flowway has also been drastically reduced. The recurrent flooding of Bonita Springs and northern Collier County can partially be attributed to disruption of this flowway. Restoration of this flowway has been considered an important element of the BCBWMP and the South Lee County Watershed Management Plan. Detailed topographic survey for the project area is being procured in 2001, and a comprehensive flowway restoration plan is proposed to be developed by FY 2004.

H. Aerial Photogrammetric Survey for Topographic Map Development

The traditional topographic maps at five-foot contour available from USGS are not adequate in providing detailed topographic elevation data for low gradient terrains of Southwest Florida. Topographic data at one-foot or less contour interval is necessary for sound water management planning.

Since 1983 the Basin has been involved in collecting topographic data through aerial photogrammetric surveying. In several years the project has been cooperatively funded with Collier County Stormwater Management Department. Presently,

topographic maps at one-foot contour developed through aerial photogrammetric surveying are available for the following areas:

1. Belle Meade Royal Palm Hammock Basin
2. District 6
3. District 7 Phase I
4. District 7 Phase II
5. CR 951 Canal corridor
6. Golden Gate - Western Belle Meade area
7. Camp Keais Strand flowway

These products have also been extensively used by the public agencies and private enterprises for numerous water management planning projects. Collection of topographic information by aerial photogrammetric survey is planned for the following areas during FY 2002 - 2006. An index map showing the locations of existing and proposed topographic survey areas are illustrated in Appendix A.

FY 2002	Northern Golden Gate Estates Phase I
FY 2003	Northern Golden Gate Estates Phase II
FY 2004	Corkscrew - Cocohatchee Canal North Basin
FY 2005	Corkscrew - Lake Trafford Area
FY 2006	Immokalee Area

I. Hydrologic Systems Modeling Enhancement

The BCB planning unit has been involved in application of surface and groundwater hydrologic-hydraulic models for several Basin planning efforts, watershed management plan development and hydraulic assessment of capital improvement

projects. The inadequacy of traditional H&H modeling programs to simulate the low terrain topographic features of BCB with high groundwater table, and canal flows with branching and different types of water control structures have required the Basin staff to explore applications ranging from one-dimensional steady state flow simulations to unsteady state continuous process two and three dimensional flow phenomena analysis. Some modeling efforts have also utilized Geographical Information System (GIS) interface to link spatial input and output data digitally.

As a part of the ongoing BCB Watershed Management planning effort a set of regional H&H models incorporating USEPA's Stormwater Management Model (SWMM) and COE's Unsteady State Hydraulic Network Model (UNET) have been applied to evaluate the effectiveness of the existing facilities in meeting the objectives of the Basin. However, this set of models did not meet the expectations in analyzing surface and groundwater interactions while evaluating the alternative water management alternatives. A comprehensive modeling package known as MIKE11/MIKE SHE developed by the Danish Hydraulic Institute (DHI) for integrated simulation of surface and groundwater flows, sediment transport, and water quality has now been applied to develop water management plans for the regional BCB watershed. This set of models is also being applied for the neighboring Caloosahatchee and South Lee County Watersheds. The BCB presently has several ecosystem restoration and capital improvement project plans for which detailed hydrologic - hydraulic assessments need to be performed before environmental assessment can be prepared for regulatory approval. In addition, the Basin comprises an integral part of the study area of the SW Florida Feasibility Study undertaken as a part of the Comprehensive Everglades Restoration Plan. This study will

be utilizing a comprehensive regional model Hydrologic Simulation Engine (HSE) developed by the District, in addition to the subregional models presently used by the Basin. It is recommended that the Basin continue to enhance the integrated surface/groundwater modeling with GIS interface to facilitate comprehensive evaluation of watershed management alternatives.

J. Estuarine Hydrodynamics and Water Quality Evaluation and Planning

The bays and estuaries along the coast are the receiving waters from the Big Cypress Basin's primary canal system. To understand the impact of the current management practices and future alternatives it is necessary to simulate the hydrodynamics of the system and relate the water management practices to the water quality biological characteristics of the estuaries.

The proposed work is to develop a hydrodynamic and water quality model for the estuary. The first step will be a comprehensive review of the available data and construction of a simple model for the estuary. This model will be used to focus the interests and needs of the stakeholders. A comprehensive model will be developed to track the impact of changes in freshwater and nutrient loads on the estuary. The model will be compatible with the water quality monitoring and biological studies currently being conducted in the estuarine system. Hydrologic and water quality performance measures will be developed to evaluate the effectiveness of water resource management. This modeling project may be used to develop a watershed management plan to meet the Total Maximum Daily Load (TMDL) requirements.

5. Capital Improvement Construction Program

Existing Program

Chapter 373.0695(2)(c) Florida Statutes specifies that Basin funds may be utilized for "payment of costs of construction of Works of the Basin executed by the District." Since 1981 the Basin has been implementing a responsible construction program to facilitate and enhance water resources management within the region. Most of the construction program activities prior to 1985 were limited to upgrading the maintenance of the water control structures. Beginning in 1985 a comprehensive construction program was undertaken to retrofit the water control structures in the Golden Gate Canal System in an effort to reduce continual overdrainage and enhance flood control capabilities. Subsequently the premise of the capital construction program was extended to other problem areas in the Basin. The major construction works completed under the capital improvement program are illustrated in Table 3.

Proposed Capital Improvement Program

The program schedule for the capital improvement construction projects outlined in the previous five year plans has been amended in this update. As previously described projects were expanded and moved up on the schedule to meet the changing needs and budgetary limitations, and resulted in proposed changes in prioritizing the projects. Accordingly, the following schedule of construction programs is outlined for the FY 2002-2006 period. The program schedule is summarized in Table 4 and illustrated in Figure 2.

Table 3

Major Capital Improvement Projects: 1981-2001

YEAR	WORK	COST
1981	Faka Union Canal Weir - plug sheet pile joints, plug V-notches, remove flash board retaining channels, replace rip rap	$141,125
1981	Gordon River Amil Gates – sandblasting and painting	10,898
1983	North Naples Drainage Canal Downstream Amil Gates – general overhaul, sandblasting and painting	80,391
1983	Golden Gate Canal - channel modification	60,043
1983	Golden Gate Canal Main Weir – install gate gasket, install synchronized hydraulic pump system, install mid-channel reinforcing davit and jack	34,000
1984	North Naples Drainage Canal Upstream Amil Gates – general overhaul, sandblasting and painting	43,000
1985	Haldeman Creek Amil Gate – sandblasting, painting and general overhaul (accomplished by U.S. Home Corporation)	37,000
1985	Golden Gate Canal Structure No. 2 - major structural modifications and reinforcing	196,260
1986	Golden Gate Canal Structure No. 3 - major structural modifications and reinforcing	305,283
1987	Golden Gate Canal Structure No. 4 - reconstruction with enhanced structural configuration	266,250
1987	Backpumping CR 31 South – installation of backpumping system	74,000
1988	Golden Gate Canal Structure No. 5 - reconstruction with enhanced structural configuration	302,000
1988	CR 31 North Structure – cooperative funding with Collier County	75,000
1989	4A-1 Structure - reconstruction with enhanced structural configuration at a different site	272,000
1991	D1-7A Weir - reconstruction with improved structural features and flood control gate	107,000
1991	D2-7 Weir - reconstruction at a downstream site with enhanced structural features, flood control gates and backpumping facility	518,000
1993	Golden Gate Canal Structures No. 3 and No. 4 - raising of weir crests	46,538
1994	Cocohatchee Canal Structure No. 1 and Channel Improvements - salinity barrier and spillway (operations began in July 1994)	900,000
1994	Palm River Weir reconstruction	134,481
1995	Cypress Canal Weir No. 4A-1 – modifications	36,786
1995	D2-8 Backpumping Facility	61,820
1996	Cocohatchee Canal Structure No. 2 - fixed weir, gated spillway and channel modification (operations began in August 1996)	913,945

Table 3 (continued)

YEAR	WORK	COST
1997	Cocohatchee Canal - replacement on Bay West, Rose Boulevard and Nursery Lane	537,000
1998	Cocohatchee Phase II Bridge – replacement (Lakeland Avenue)	150,000
1999	Cocohatchee Canal Phase III A - improvements	1,371,000
1999	Cocohatchee Canal Phase III B – improvements	1,017,000
1999	Cocohatchee Canal Weir No. 3	798,000
1999	Lucky Lake Water Control Structure	260,000
1999	Cocohatchee Phase III A Bridges	1,462,000
1999	Lake Trafford Restoration - Land Acquisition	1,300,000
2000	Cocohatchee Canal – North Bank Revetment	386,000
2001	Cocohatchee Canal – Phase 4 Improvement	100,000

A. CR 951 Canal Improvements

The northern segment of the CR 951 Canal between the Golden Gate Main Canal and CR 846 was adopted as "Works of the Basin" effective FY 1994. The original CR 951 Canal had two water control structures with V-notches. However, one of them had to be removed due to the relocation of the canal required as part of the four-laning improvements to the road, and the other was removed to make room for the utility crossing of North County Water Treatment Plant. The CR 951 Canal provides stormwater management for the urban and semi-urban areas of Golden Gate as well as sources of recharge to the nearby water supply wellfields of the Golden Gate City. The canal presently does not have adequate conveyance capacity to provide the desired levels of flood protection. Enhancement of channel capacity with facilities for control of the flow will improve its water management functions. The construction is planned for completion in FY 2002. The estimated cost of canal modification, culvert replacement and weir for this project is approximately $2,424,000.

B. Golden Gate Canal Weir No. 1 Replacement

The Golden Gate Weir No. 1 is the main outfall weir of a 120 square mile watershed. The structure is now approximately 35 years old, and is exceeding its useful life. Its present structural components with a movable crest gate provide for only two discharge configurations: one with the gate down at elevation 2.0 feet NGVD, and the other with the gate up at elevation 3.35 feet NGVD. It is incapable of meeting the current water management objectives. In order to enhance its effectiveness in reducing overdrainage and freshwater discharge impacts to the Naples Bay, and to provide more

operational flexibility for water management, retrofit of the structure is proposed in FY 2002. The estimated construction cost is $2,500,000.

C. Faka Union Canal Weir No. 5 Retrofit

The Faka Union Canal Weir No. 5, a fixed crest weir with operable steel gates underwent structural failure in 1997. This is a strategic water control structure protecting the freshwater supplies of the City of Naples Eastern Golden Gate Wellfield. The structure has been replaced by constructing a temporary low-head sheet pile weir. The temporary weir does not have any operable functions, and is not adequate to provide the desired levels of flood protection and aquifer recharge. Retrofit of this structure is proposed in FY 2002. The estimated construction cost is $750,000.

D. Corkscrew Canal Improvements

The Corkscrew Canal and its side ditches continue to overdrain an extensive portion of the Bird Rookery Swamp of the Corkscrew Regional Ecosystem Watershed. The canal system also does not have adequate flood conveyance capacity due to small cross-sectional area of the channels and numerous undersized culverts.

Two low-head water control structures were constructed in FY 2000 to prevent dry season overdrainage. Additional channel improvement for 3.5 miles of canals and replacement of six culverts are required. The Basin has proposed an agreement with the Collier County Transportation Services Department for the replacement of the culverts as the Phase I Improvement. The estimated cost of Phase I Improvement is $1,000,000. The Phase II Improvement with channel modification is proposed in FY 02. The estimated construction cost for Phase II is $750,000. The construction is proposed to begin in FY 2002.

E. Golden Gate Canal/Henderson Creek Diversion Project

The BCB Watershed Management Plan has recommended implementation of a diversion canal to connect Golden Gate Main Canal and Henderson Creek across I-75. The objective of this project is to divert a portion of the Golden Gate Canal flows to restore the historic flowways of the Henderson Creek Basin, and reduce flooding along the urbanized areas of Golden Gate Main Canal. It will additionally reduce voluminous freshwater shock load to the Naples Bay Estuary. The Basin Staff is coordinating with a land developer to implement the diversion through a series of lakes for eventual connection to the upper reaches of Henderson Creek. The construction and land acquisition cost of the project is estimated at $1,500,000.

F. Faka Union Canal Weir No. 4 Retrofit

The Faka Union Canal Weir No. 4 provides important water control functions for groundwater recharge to the adjoining Eastern Golden Gate Estates Wellfield of the City of Naples Water Utility. It was constructed approximately 25 years ago as a V-notch weir. In 1983 the Board of Collier County Commissioners added provisions for water storage with stop log operation. The stop logs were not leak proof and were susceptible to continual vandalization. In 1992, the Big Cypress Basin Operations and Maintenance staff modified the structure by replacing the stop logs with winch-operable steel gates. The structure has now almost run its useful life.

Due to strategic importance of this aging structure in preserving the yield of the wellfield, a complete retrofit of the structure is proposed in FY 2003. The estimated construction cost is $2,000,000.

G. C-1 Connector and Miller Canal Weir No. 3 Rehabilitation

An interbasin connecting network between the Golden Gate Canal and the Faka Union Canal Basins has been considered a priority element to meet the objectives of the BCB Watershed Management Plan. The project would involve modification of the disjointed segment of the C-1 Connector between Miller and Golden Gate Main Canals, and relocation of the existing water control structure Miller No. 3 to a location near the confluence of the two canals. This arrangement can provide important water management features for relief of floodwater as well as for groundwater recharge avenues to the adjacent wellfields of the City of Naples and Collier County Utilities. Subsequent to completion of a detailed feasibility analysis, the project is proposed to be implemented in FY 2004. The estimated construction cost is $2,000,000.

H. Repair – Remodel of BCB Field Station Building

The BCB field station is presently housed in a metal building with its work areas renovated from an old lumber store. The roof of the building now badly leaks and the shop and machinery areas need upgrading to make the operation of the field station cost efficient and energy efficient. It is recommended that the repair/renovation of the field station building be performed in FY 2003. The estimated construction cost for the project is $100,000.

I. Golden Gate Canal Improvement

The drainage area of the Golden Gate Main Canal is undergoing a rapid urban development boom. The increase in impervious areas has resulted in drastic reduction of the times of concentration of storm runoff and flash flooding in many parts of the basin. Hydraulic evaluation of the canal performed as a part of BCBWMP recommended

improvement of the channel to enhance its conveyance capacity for a 25 – year design storm. Accordingly, the most urbanized reach of the Golden Gate Canal between Airport Road and CR 951 is proposed to be modified in several phases beginning in FY 2005. The estimated construction cost of Phase I and Phase II is $4,000,000.

J. Ecosystem Restoration Projects

The Basin is presently in the process of implementing three capital improvement projects in cooperation with the U.S. Army Corps of Engineers to restore the historic flowways and the ecologic values of the region. These projects are:

- Southern Golden Gate Estates (SGGE) Hydrologic Restoration
- Tamiami Trail Flow Enhancement
- Lake Trafford Restoration

Of these, the SGGE project is an element of the Comprehensive Everglades Restoration Program (CERP), and the Lake Trafford and the Tamiami Trail Projects are being implemented as a part of the Critical Ecosystem Restoration Projects funded by congressional authorization under the Water Resources Development Act of 1996 (WRDA 96). Due to the multi-year implementation schedule of these projects, the capital improvement costs are proposed to be budgeted collectively under Managerial Reserve Funds in each annual budget. These projects are described below.

K. Southern Golden Gate Estates Hydrologic Restoration Project - Managerial Reserve

The implementation of the SGGE hydrologic restoration plan has been identified as a priority critical ecosystem restoration project by the South Florida Ecosystem Restoration Working Group. Funding for construction of the project was identified under the initiative with 50 percent Federal funding through the U.S. Army Corps of Engineers.

However, in September 1999 COE ruled that under the WRDA96 guidelines the SGGE project would not be eligible for funding due to a ceiling of $25 million of federal partnership for any project. The SGGE project had received $25 million from the U.S. Department of Interior for land acquisition.

The implementation of the SGGE restoration plan has now been considered under the Comprehensive Everglades Restoration Program (CERP) initiative. The estimated construction cost of the project is $25 million. As the local non-federal sponsor, the Basin will have to share the non-Federal sponsor cost of the project. It will be difficult to generate the non-federal sponsor share of the project cost in one or two budget years while keeping the other planned capital projects on track. It is, therefore, proposed to continue building up the project cost by accumulating managerial reserve funds that started in FY 2000. The initial phases of the project construction are expected to begin in FY 2003.

L. Tamiami Trail Flow Enhancement Critical Restoration Project

The elevated roadbed of the Tamiami Trail is a physical barrier to the natural surface water sheetflow. It impedes the north-south sheetflow in Ten Thousand Islands, SGGE, Fakahatchee Strand, Big Cypress National Preserve, Water Conservation Area 3A, and Everglades National Park, which is critical to supporting the regional wetland ecosystems. The existing bridges and water control structures are inadequate for transmitting surface water beneath the Tamiami Trail. The borrow canal immediately north of the Tamiami Trail intercepts this south-southwest flow and transfers it to an east-west flow direction until it exits south through bridges or water control structures. Due to this channelization of flowways, some wetland habitats receive too much freshwater,

while others do not receive enough. Also, the seasonal hydropatterns, quantity, timing and distribution of surface water flows are interrupted.

Under the Critical Ecosystem Restoration Program, a restoration plan for enhanced flow across the Trail has been initiated. The projects will involve construction of 62 culverts at 54 locations under Tamiami Trail, and 15 culverts at 8 sites under Loop Road. The U. S. Army Corps of Engineers and the Florida Department of Transportation (FDOT) are the Cooperating agencies for the project with the Basin as the local sponsor.

The COE will design and construct project facilities, FDOT is the local funding sponsor for the Tamiami Trail segment, and the Basin is the local funding sponsor for the Loop Road segment of the project. The total estimated project cost is $15.6 million, which includes resurfacing of the road following the project construction. The Basin's share is $965,000 for the project and construction is expected to commence in FY 2003.

M. Lake Trafford Critical Restoration Project

Lake Trafford is the largest natural lake south of Lake Okeechobee (1,494 acres). The lake is the headwaters of the Corkscrew Swamp Sanctuary and Corkscrew Regional Ecosystem Watershed (CREW) to the west-southwest, and the Fakahatchee Strand system, including Camp Keais Strand and the Florida Panther National Wildlife Refuge to the south. Approximately 8.5 million cubic yards of unconsolidated muck on the bottom of the lake was created by the decayed biomass resulting from the use of herbicides on numerous Hydrilla blooms. During storm events, the sediments are disturbed causing an increase in suspended solids, dissolved nutrients, and biological oxygen demand (BOD). Loss of water clarity, unconsolidated sediments, and low dissolved oxygen (DO) have resulted in a decimated fishery.

A critical ecosystem restoration plan has been developed for implementation under the WRDA 1996 funding initiative with the COE. The BCB is the non-federal sponsor of the project. Partial funding for the non-federal expenditure share of the project has been obtained from the State of Florida, and from the Collier County Tourist Development Council (CCTDC). In FY 1999, the BCBB provided $1.3 million for land acquisition of the sediment disposal site. The project will restore water quality and habitat functions of Lake Trafford. Removal of the muck to farmland will provide additional flood control storage, improve lake quality and enhance farmland productivity. Furthermore, surrounding agricultural development has committed to using BMPs to reduce pollutant loading into the lake, to allow for a long-term improvement to the lake habitat. The lake provides recreational fishing activities and supports a tourism industry for an economically depressed region.

Table 4

Five - Year Capital Improvement Projects

Fiscal Year	Project	Estimated Cost
2002	Golden Gate # 1 Retrofit	$2,500,000
	CR 951 Canal Improvements	$3,400,000
	Corkscrew Canal Improvements Phase I	$1,000,000
	Faka Union # 5	$750,000
	Henderson Creek Diversion	$1,500,000
	Land Acquisition for Faka Union # 4	$50,000
	Ecosystem Restoration Project Reserves	$1,628,433
2003	Faka Union Canal Weir # 4 Retrofit	$2,000,000
	Corkscrew Canal Improvements Phase II	$500,000
	Land Acquisition for Miller # 3/C-1 Connector	$70,000
	Repair of Field Station Building	$100,000
	Ecosystem Restoration Project Reserves	$1,000,000
2004	C-1 Connector and Miller Weir # 3 Improvements	$1,500,000
	Airport Road South Retrofit	$1,000,000
	Ecosystem Restoration Project Reserves	$1,000,000
2005	Golden Gate Canal Improvements Phase I	$2,000,000
	Camp Keais Strand Flowway Improvements	$1,000,000
	Ecosystem Restoration Project Reserves	$1,000,000
2006	Golden Gate Canal Improvements Phase II	$2,000,000
	Corkscrew/Golden Gate Canal Connector	$1,000,000
	Ecosystem Restoration Project Reserves	$1,000,000

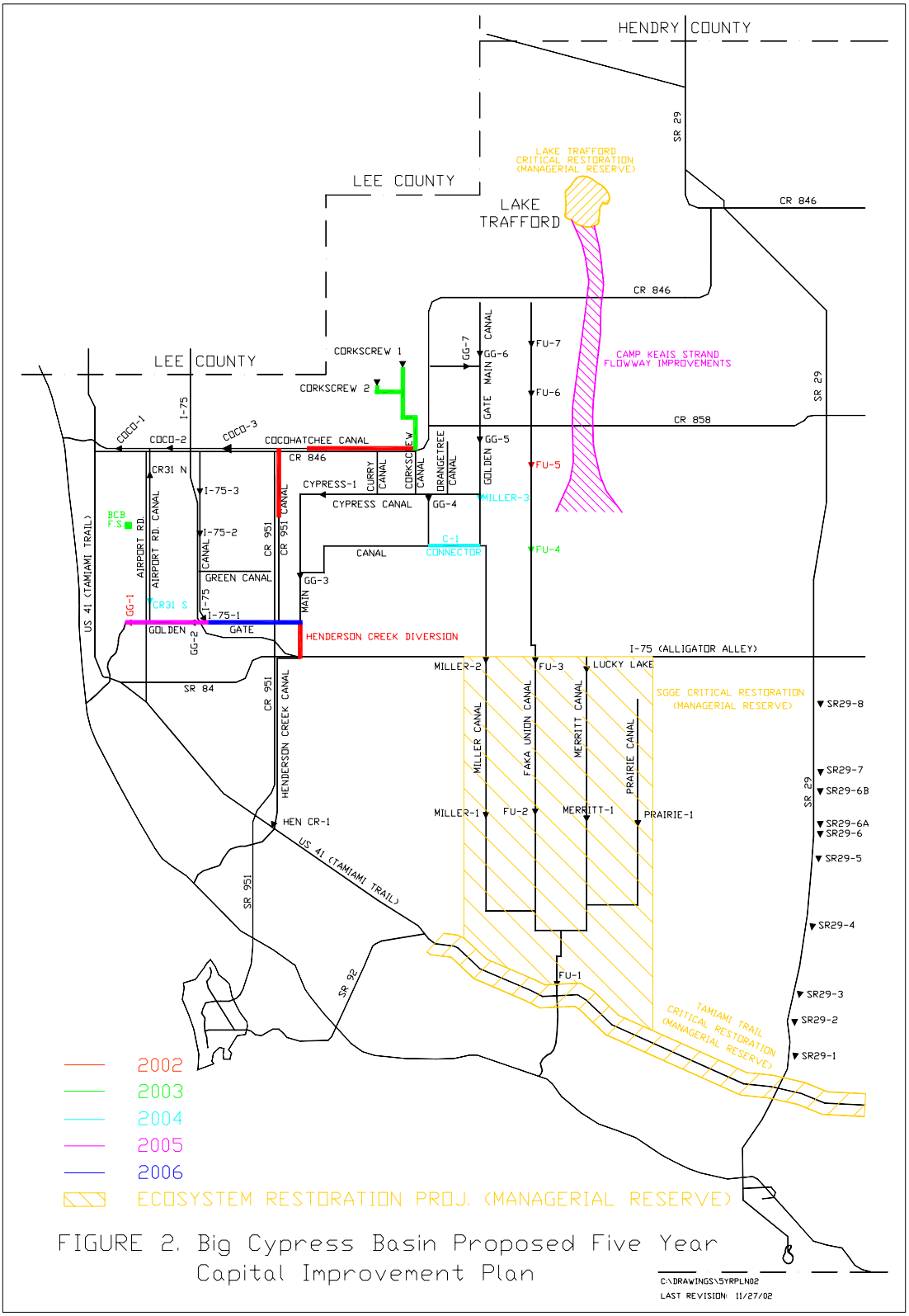


FIGURE 2. Big Cypress Basin Proposed Five Year Capital Improvement Plan

Operations and Maintenance
Field Station Overview

The present activities of this program involve carrying out the responsibility of operating and maintaining the "Works of the Basin," which presently consist of maintaining 169 miles of primary canals and 42 water control structures (Figure 1 and Table 1). The maintenance work in the canals involve shoal and debris removal and control of aquatic and terrestrial vegetation by use of herbicides or mechanical methods to maintain design flow conveyance. The operation and maintenance of water control structures involves maintaining the structures and their operating mechanisms in good working order to provide timely operation of the structures to achieve the Basin's water management objectives. In addition to the maintenance of the canals and water control structures, the Basin is responsible for aquatic weed control activities on Lake Trafford, a 1600-acre lake in north central Collier County. A cooperative funding agreement with the Florida Department of Environmental Protection (FDEP) has helped maintain the recreational value.

A Basin Field Station was established in 1988 to carry out the functions of the operations and maintenance program. The program is managed by the Director of Field Operations who, at present, oversees the operation of a staff of two Crew Chiefs, four State-certified Vegetation Management Technicians, one Crane/Dragline Operator, two Heavy Equipment Harvester Operators, one Excavation/Earthmoving Operator, one Senior Fleet Technician, and one Senior Engineering Associate (Figure 3).

Over the past decade the Basin has been able to maintain effective aquatic weed control of the primary canal system through a very aggressive maintenance program. The Basin has developed an aqua-management strategy utilizing the channel to accomplish

most maintenance tasks. Within the system's limitations, this has been very effective and reduced the need for the Basin to purchase additional rights of way (ROW) to support land-based equipment. The Basin utilizes multi-use aquatic equipment to perform an array of maintenance tasks including shoal removal, bank restoration, brush control, debris removal, vegetation management and suction head dredging. Herbicide use has been minimized by the aqua-management strategy through the use of timed-release applications of herbicides using the flow of the canal as the spreader. This has resulted in the excellent control of the noxious aquatic plant hydrilla which in the past had completely choked the water column in the majority of the primary canals. Some canals have not required additional applications for over five years.

The Operations and Maintenance section of the Big Cypress Basin has become more proactive and less reactive. This has been achieved through better planning and scheduling of our limited resources. To accomplish this we continue to define labor standards for each maintenance task, thus identifying the time required to complete each activity. This enables us to plan our three-month maintenance projections more realistically.

In addition to more effective utilization of our resources, we continue to seek easier, more expediate and safer methods to accomplish our tasks. In conjunction with this, we are always looking for state-of-the-art equipment that is more versatile, reliable and efficient.

Operations and Maintenance Activities

The current canal maintenance strategy has evolved as a result of a comprehensive evaluation of various options available in the industry to maintain canals from land and water. The lack of ROW (overbanks) has resulted in the combination of land- and water-based equipment being used to meet operations and maintenance requirements. This has proven so far to be the most effective approach in meeting the maintenance objectives of the Basin.

We will continue to utilize this strategy and fine tune it to accomplish our program responsibilities.

A. Structure and Facility Maintenance

Program Mission

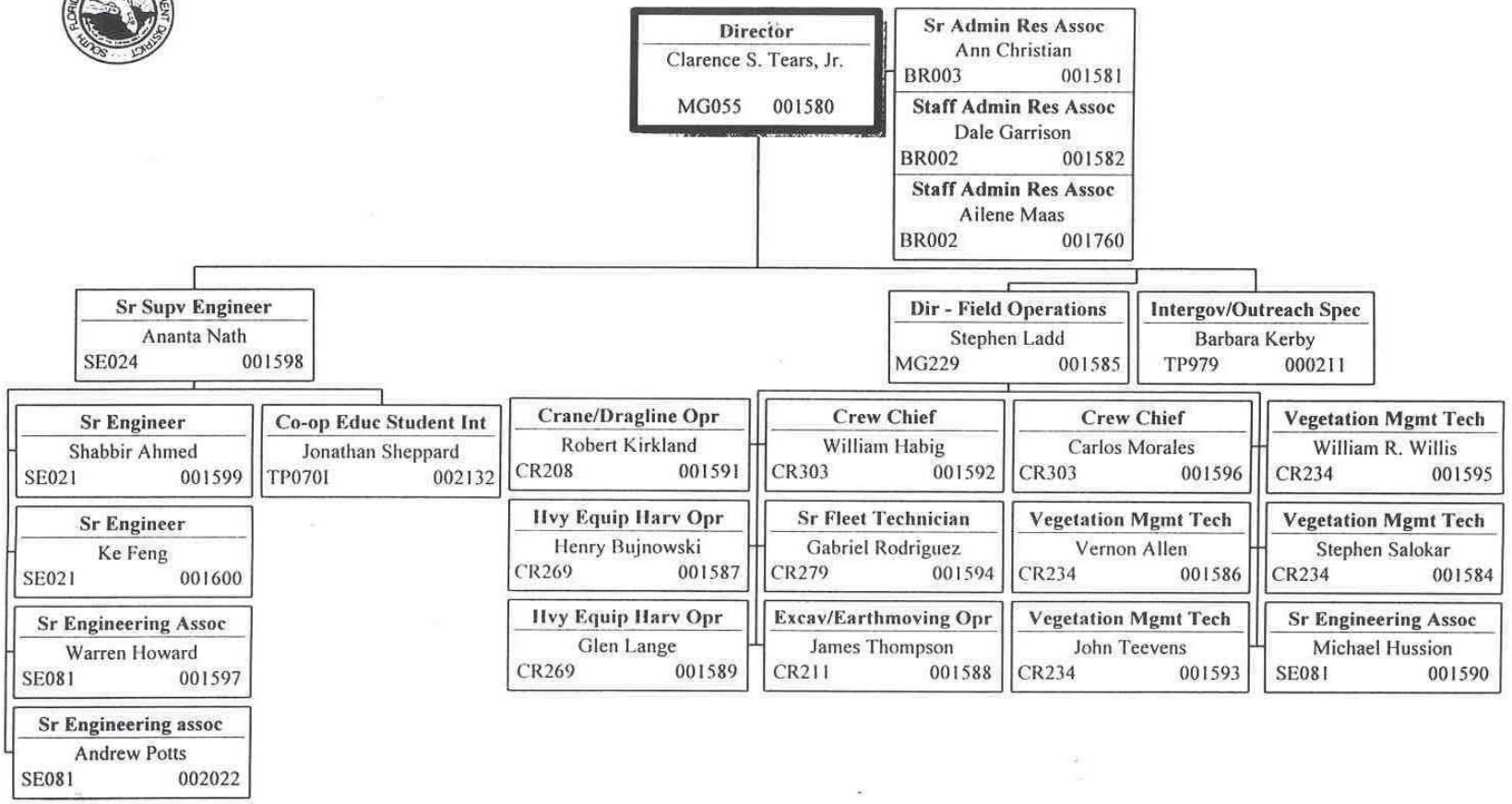
- Ensure the reliability of water control structures and Basin facilities through a quality preventive maintenance program.

Goals and Objectives

- Improve the crews' efficiency and effectiveness through good short- and long-range planning
- Continuously improve the preventive maintenance program
- Continue to provide cross-training for all personnel
- Support other field stations as required
- Continuously provide a high-quality work product

BIG CYPRESS BASIN
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Table of Contents No:
Chart No: EO1701710_1
Date: 10/01/01
Supersedes:



Program Trends and Conditions

Structure and facility maintenance is a key program responsible for activities that have direct impacts on water management for the residents of Collier County. The program is responsible for the maintenance of field station and administration building facilities, and 42 water control structures. The main function of this program is to ensure the reliability of the facilities through preventive maintenance, repairs and upgrades.

In August of 1997, the Basin published its "Manual of Water Control Structures," which provides the basic technical information pertaining to the operations and maintenance of the water control structures. This manual is updated on an as-needed basis. Structures to be included in this manual in FY 2002 include Corkscrew No. 2, Corkscrew No. 3, and Henderson Creek. The information in this manual is supplemented by the "Operation Schedule of Water Control Structures" which is updated by the Basin's planning section when changes occur.

In October of 1997, the Basin published "Suggested Operating Procedures" for the maintenance of each of its water control structures. This has greatly enhanced the preventive maintenance program by assisting in the cross training of all operations and maintenance personnel. This will also be updated in FY 2002.

Routine maintenance with biweekly, monthly and annual inspections of all mechanically and manually operated structures will continue. This program does 600 inspections and associated maintenance annually. They also perform more than 100 manual gate operations. In addition, a comprehensive structural integrity inspection and evaluation program has been proposed for several strategic structures and is outlined later in this section of the report.

The Field Station facilities are more than 25 years old and need some major repairs. It is proposed to replace the roof and renovate the work areas in FY 2003 at an estimated cost of $100,000. It has been patched on numerous occasions and has deteriorated to the point where patching is no longer a viable option. The air conditioning unit is the same age and will be replaced in FY 2003 also.

Table 5 provides the activity schedule for structure and facility maintenance for the next five years.

B. Aquatic/Terrestrial Vegetation Management

Program Mission

- Keep Basin canals and easements within the service level required for optimum conveyance of water by controlling aquatic and terrestrial plants that are recognized as existing or potential problems through the use of a variety of herbicide applications.

Goals and Objectives

- Coordinate closely the aquatic applications with aquatic equipment operations
- Maintain equipment to acceptable standards
- Maintain a high level of professionalism and public responsiveness
- Provide crew cross-training
- Improve employee morale through sound leadership
- Keep up-to-date on new technology
- Maintain a 90 percent control rate of targeted floating plants
- Maintain a 70 percent control rate of targeted submerged aquatic plants
- Maintain a 90 percent control rate of targeted emergent plants

- Eliminate Brazilian Pepper from the primary canal system within the next three years
- Continue to maintain Lake Trafford in cooperation with Florida Department of Environmental Protection
- Control exotic vegetation on the acquired Lake Trafford disposal site until the restoration is completed. This is to be scheduled quarterly.

Program Trends and Conditions (Aquatic/Terrestrial Vegetation Management)

This program must remain technically proficient in the use of herbicides. Our primary objective is to maximize the effectiveness of herbicides on targeted plants without adverse water quality impacts.

Invasive exotic vegetation is continually being identified in our primary canal system and the technicians must keep up with the appropriate control methods. In 1999, Salvinia Mollesta was encountered in the Airport Road Canal. After consulting with the District's Vegetation Management Personnel and Florida Department of Environmental Protection, we were able to eradicate this highly invasive plant. We are currently working with the same people and the manufacturer of Arsenal, a terrestrial herbicide, to test an aquatic label Arsenal in the Golden Gate Main Canal to eradicate "Floating Hearts." The spray crews currently treat more than 1300 acres of exotic vegetation annually.

We will continue to identify new invasive plants and treat them with herbicides utilizing the most up-to-date chemicals and procedures.

Table 6 provides the activity schedule for the two aquamogs.

C. Canal/Levee Maintenance

Program Mission

- Provide maintenance support during normal and emergency conditions through the use of heavy equipment to maintain Basin canal banks and easements to acceptable standards.

Goals and Objectives

1. Maintain canals and easements in a stabilized condition according to their design criteria in order to support on-going maintenance, flood control and public use
2. Maintain operator involvement in the equipment selection process
3. Maintain high professionalism and responsiveness in dealing with the public
4. Support other field station programs and maintain close coordination with the Senior Engineering Associate
5. Identify and implement new technology.

Program Trends and Conditions

In recent years, canal/levee maintenance has focused on easement repairs in support of Basin operations and maintenance activities. Work efforts will continue to focus on bank restoration in areas that support Basin maintenance activities. Table 7 provides the activity schedule for canal/levee maintenance for the next five years.

Equipment Replacement and Staffing

The schedule for replacing major equipment is outlined in Table 8. Currently preliminary planning and discussions are being held regarding the construction of a two-mile reach of canal to connect the Golden Gate Main Canal with the Henderson Creek

Canal. When this occurs, no addition to the Operations and Maintenance staffing will be required. However, if the Operations and Maintenance responsibility of SR 29 Canal from I-75 to U.S. 41, approximately 13 miles, is assumed from the National Park Service and Department of Transportation, the needs for additional staff, equipment and chemicals will have to be assessed. All new water control structures are proposed to be equipped with automated gate control devices to minimize labor-intensive operations. Preventive maintenance will be the key to long-term reliability of these new structures.

D. Canal Rights of Way

In addition to the regular operation and maintenance of the canals and water control structures, the administration of canal ROW permits is coordinated under the auspices of this program. Presently the Senior Engineering Associate conducts the inspection of canal ROW occupancy process with the landowner and the District Rights of Way Permit Division.

The ROW encroachments on the Golden Gate Main Canal, Airport Road Canal, Cypress Canal, Cocohatchee Canal, I-75 Canal, Henderson Creek Canal, CR 951 Canal, and Miller Canal have been thoroughly inventoried.

A challenge for the Basin is the lack of survey information for the remaining primary canal system making it difficult to identify encroachments. The Basin has limited staff ability in getting existing inventoried encroachments identified/inventoried and permitted. The Basin, being a relatively new agency in the management of the primary canal system in Collier County, has tried to contact each homeowner to improve public awareness of the ROW permit process. If contact cannot be made, an introductory form letter is left at the property explaining the need to get their encroachments under

permit. This has been a very time consuming but successful process, resulting in more than 50 percent of encroachments being properly permitted.

A schedule of mapping and inventorying of ROW during the five-year plan period is outlined in Table 11. With the continuation of the aqua-management strategy, efforts will be directed toward utilizing the dead-end streets for access of aquatic maintenance equipment to and from the canals. Therefore, the overbank ROW of only limited reaches will be cleared and maintained for land-based equipment access. The management of the canal ROW will be continued through the permit process to control and regulate encroachments for an effective and efficient operation and maintenance program.

The ROW activity program will be administered by the Senior Engineering Associate whose main focuses will be:

1) Identification of all existing encroachments and/or uses of the "Works of the Basin."
2) Prepare inventory of books which will show the location of the encroachment and/or use and note whether it is permitted or not.
3) Assist the public with the permitting process.
4) Check existing permits for compliance and take corrective action when necessary.
5) Staking and monumenting right-of-way easement lines.

All of these items can be accomplished by utilizing available resources. Items 1 and 5 can be performed simultaneously by using land surveying methods. Item 2 will be completed with the aid of a computer assisted drafting system. Item 3 will be performed on an "as needed" basis. Item 4 will be performed by reviewing existing permits and preparing "final inspections."

In densely populated/developed reaches, maintenance agreements are an option to purchasing additional rights-of-way/easements, thus eliminating some of the more time consuming maintenance activities along the canals.

In certain areas of the Basin, the actual canal exceeds the limits of the drainage easement. This poses a problem in the aspect of right-of-way lines. It is possible that the District/Basin may be requiring individuals to apply for a permit outside of its regulatory jurisdiction. Twenty-six miles of the Golden Gate Main Canal have been surveyed and monumented. This survey has shown that in certain areas along the Golden Gate Main Canal, the canal does in fact exceed the limits of the drainage easement. This is very valuable information, not only from a permitting standpoint, but also from an operational standpoint by knowing how much overbank is available for District/Basin use. Therefore, it is very important to continue in this pursuit until all District/Basin canals have been surveyed and monumented.

Table 9 outlines these surveying goals for the remainder of the Basin's canal system excluding Southern Golden Gate Estates. An inventory of surveying books will be completed by the end of FY 2005.

The Faka Union Canal Weir No. 4 is proposed to undergo retrofitting in FY 2003. As in the Faka Union Weir No. 5 project, property will also need to be acquired at an estimated cost of $50,000 in FY 2002.

With the C-1 Connector and Miller Canal Weir No. 3 Relocation Project scheduled for FY 2004, property will need to be acquired near the confluence of the Miller Canal and C-1 Connector to accommodate the relocation of the Miller No. 3 Weir.

This will need to be done in FY 2003 at an estimated cost of $50,000. Table 9 outlines the land acquisition goals for the Basin's weir retrofit and relocation projects.

Another important requirement of the right of way maintenance program is to keep the canal rights of way free from encroachment of exotic vegetation. Chemical control for exotics like Australian Pines, Melaleuca and Brazillian Peppers is not effective. A program for mechanical removal and eradication of the exotic trees and shrubs is for the five – year plan cycle is outlined in Table 10 and Figure 4.

INSERT

PROPOSED BCB LAND ACQUISITION MAP

E. Structure Inspection

Periodic evaluation of the structural integrity and hydraulic performance of water control structures is an important function in the maintenance of hydraulic structures. All structures are inspected monthly, with a comprehensive inspection annually. The impact of a saltwater environment, instability of foundations, rusting of gates and degradation of movable parts with age can lead to the ultimate failure of a structure if proper corrective measures are not undertaken. In addition, continual accumulation of sedimentation behind the conservation pool of a weir can deteriorate the design hydraulic performance of a structure. The age of several of the Basin's water control structures are in excess of 30 years.

The integrity of these structures will be evaluated through a structural contracted inspection program. Beginning in FY 1995, the Basin instituted a comprehensive structural inspection program of Basin structures. The following is a schedule of the completed and proposed structure inspection program of Basin works.

Schedule of Structure Inspections Proposed

FY 2002	Golden Gate Weir No. 5
	I-75 Canal Weir No. 2
	I-75 Canal Weir No. 3
FY 2003	Golden Gate Canal Weir No. 3
	Golden Gate Canal Weir No. 4
	Golden Gate Canal Weir No. 6
FY 2004	Golden Gate Canal Weir No. 7
	I-75 Canal Weir No. 1
	Cocohatchee Canal Weir No. 1
FY 2005	Cypress Canal Weir No. 4A1
FY 2006	Cocohatchee Canal Weir No. 2

Previous Structure Inspections

FY 1995	Henderson Creek Weir No. 1
	Airport Road Canal South Amil Gate
FY 1996	Faka Union Canal Weir No. 2
	Faka Union Canal Weir No. 4
	Faka Union Canal Weir No. 5
	Miller Canal Weir No. 1
FY 1997	Faka Union Canal Weir No. 1
	Golden Gate Canal Weir No. 1
	Golden Gate Canal Weir No. 6
FY 1998	Faka Union Canal Weir No. 6
	Faka Union Canal Weir No. 7
	Big Cypress Basin Field Station Building
FY 1999	Airport Road Canal North Amil Gate
	Golden Gate Canal Weir No. 2

Table 5

Structure and Facility Maintenance

Activity	FY 02 Quarters				FY 03 Quarters				FY 04 Quarters				FY 05 Quarters				FY 06 Quarters			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Staff Gauge Repairs as Required		X				X				X				X				X		
Float Repairs and/or Replacement at Backpumps				X				X				X				X				X
Painting and Repair Faka Union Gates as Required		X				X				X				X				X		
Structure Cleaning	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Monthly Operational Inspections	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hurricane Preparedness			X				X				X				X				X	
Annual Structure Inspections	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Replace Field Station Roof						X														
Replace Field Station Air Conditioner						X														

Table 5 (continued)

Structure and Facility Maintenance

Activity	FY 02 Quarters				FY 03 Quarters				FY 04 Quarters				FY 05 Quarters				FY 06 Quarters			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Gear Box Inspections Golden Gate 2,3,4,5 I-75 1,2,3; Cypress		X				X				X				X				X		
Field Station and Admin Building Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Structure/Gate Overhauls	Based upon annual inspections completed in house and the contracted structural inspection program no overhauls are anticipated during the next five years.																			

Table 6

Aquamog

Location		FY 02 Quarters				FY 03 Quarters				FY 04 Quarters				FY 05 Quarters				FY 06 Quarters			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
I-75 Canal				X				X				X				X				X	
Green Canal																					
Merritt Canal - Lucky Lake Structure to Merritt #1																					
Golden Gate Main Canal	GG#3 to GG#1																				
	GG#2 to GG#1																				
Merritt Canal - Lucky Lake to Merritt #1																					
Golden Gate Main Canal - GG#3 to GG#1				X				X				X				X				X	
Curry Canal				X				X				X				X				X	
Orangetree Canal				X				X				X				X				X	
Corkscrew Canal - South of CR 846				X				X				X				X				X	

Table 6 (continued)

Location		FY 02 Quarters				FY 03 Quarters				FY 04 Quarters				FY 05 Quarters				FY 06 Quarters			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cypress Canal	GG#4 to Cypress #1		X				X				X				X				X		
	Cypress #1 to GG#3		X				X				X				X				X		
Golden Gate Main Canal	GG#5 to GG#4 to MI#3		X				X				X				X				X		
	GG#4 to GG#3		X				X				X				X				X		
Cocohatchee Canal		X				X				X				X				X			
Golden Gate Main Canal	GG#5 to GG#6		X				X				X				X				X		
	GG#6 to Head-waters		X				X				X				X				X		

Table 6 (continued)

Location		FY 02 Quarters				FY 03 Quarters				FY 04 Quarters				FY 05 Quarters				FY 06 Quarters			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Faka Union Canal	FU#7 to Head-waters				X				X				X				X				X
	FU#6 to FU#7				X				X				X				X				X
	FU#5 to FU#6				X				X				X				X				X
	FU#4 to FU#5				X				X				X				X				X
	FU#3 to FU#4				X				X				X				X				X
Miller Canal	MI#2 to MI#1				X				X				X				X				X
Faka Union Canal FU#3 to FU#2					X				X				X				X				X

Table 7

Canal/Levee Maintenance Schedule

Activity	FY 02 Quarters				FY 03 Quarters				FY 04 Quarters				FY 05 Quarters				FY 06 Quarters			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Repair Boat Ramps			X				X				X				X				X	
Erosion Repairs	X	X			X	X			X	X			X	X			X	X		
Mow Easements and Around Structures		X		X		X		X		X		X		X		X		X		X
Shoal Removal	X				X				X				X				X			

Table 8

OPERATIONS AND MAINTENANCE EQUIPMENT PROJECTIONS BASED ON FLEET'S FIVE YEAR REPLACEMENT PLAN				
FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Major Equipment: Replacements: #1485 – Sedan ($16,000.00)	Major Equipment: Replacements: #1071 – Backhoe Tracked Gradall ($175,000.00)	Major Equipment: Replacements: #1484 – ¾ Ton 4X4 Pickup, Clubcab ($28,000.00) #1679 – Bronco, SUV ($25,800.00) #1680 – Bronco, SUV ($25,800.00)	Major Equipment: Replacements:	Major Equipment: Replacements: #1287 – Boat Trailer ($4,000.00) #1541 – Utility Trailer ($9,500.00) #1676 – GMC Jimmy, SUV ($25,000.00)
$16,000.00	$175,000.00	$79,600.00		$38,500.00

Table 9

Big Cypress Basin
Right of Way Maintenance Schedule

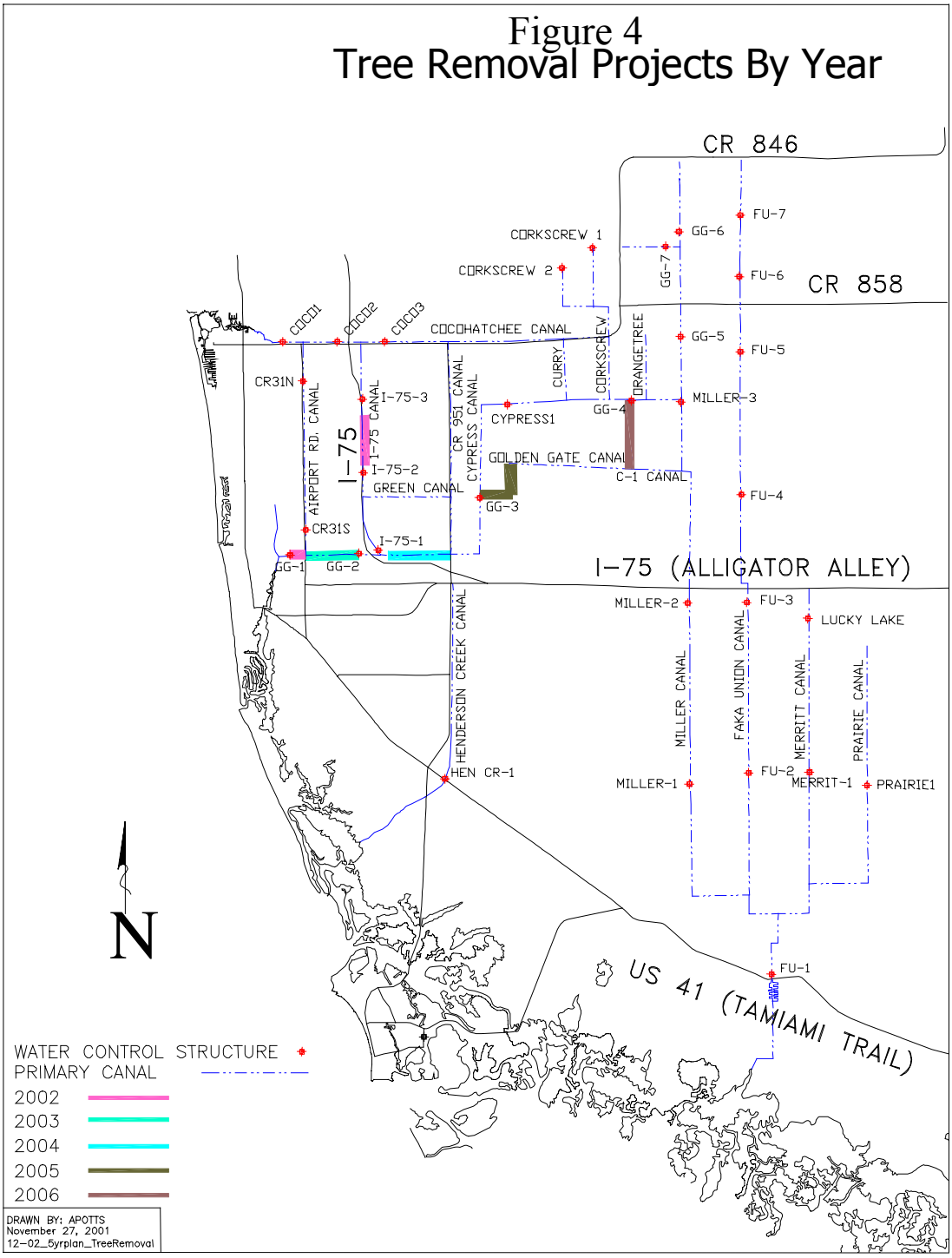
FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Ongoing Identification & Inspection of Permitted & Non-permitted Uses	X	X	X	X
Coordinate R/W Permitting	X	X	X	X
Inventory Books: Prepared/Revised/Updated 1. Finish Cypress Canal 2. Curry Canal 3. Corkscrew Canal	Inventory Books: Prepared/Revised/Updated 1. Orangetree 2. I-75 3. Begin Faka Union	Inventory Books: Prepared/Revised/Updated 1. Finish Faka Union 2. C-1 Connector 3. Begin Miller	Inventory Books: Prepared/Revised/Updated 1. Finish Miller	Inventory Books: Prepared/Revised/Updated Update as Needed From Permits & Inspections
Survey & Monument Canal R/W 1. Miller Canal (N of I-75)	Survey & Monument Canal R/W 1. Faka Union (I-75 to Golden Gate Blvd.)	Survey & Monument Canal R/W 1. Faka Union (Golden Gate Blvd. To Oil Well Grade) 2. Orangetree	Survey & Monument Canal R/W 1. Faka Union (Oil Well Grade to Headwaters)	Survey & Monument Canal R/W $5,000 As Needed
Estimated cost of Surveying 1. Miller Canal (N of I-75) $20,000	Estimated Cost of Surveying 1. Faka Union (I-75 to Golden Gate Blvd.) $20,000	Estimated Cost of Surveying 1. Faka Union (Golden Gate to Oil Well Grade) 2. Orangetree $8,000	Estimated Cost of Surveying 1. Faka Union (Oil Well Grade to Lead) $20,000	Estimated Cost of Surveying $5,000
Total Survey Cost $20,000	Total Survey Cost $20,000	Total Survey Cost $25,000	Total Survey Cost $20,000	Total Survey Cost $5,000
Land Acquisition Faka Union #4	Land Acquisition Miller #3	Land Acquisition	Land Acquisition	

Table 10

Tree Removal Projects

Year	Project Description	Cost
2002	Golden Gate Main Canal, Golden Gate No. 1 to Airport Road, North Bank, Remove Exotics, Bears Paw, Approx. ½ Mile	$18,000
	Remove Australian Pines from the I-75 Canal at the Vineyards	$8,000
2003	Golden Gate Main Canal, South Bank, Airport Road East to Golden Gate No.2, Remove Exotics, Damaged Trees, Trees on Slopes, Etc., Approx. 1.75 Miles	$87,500
2004	Golden Gate Main Canal, South Bank, Santa Barbara Blvd. To CR 951, Remove Exotics, Damaged Trees, Trees on Slopes Etc., Approx. 2.0 Miles	$100,000
2005	Golden Gate Main Canal, Golden Gate No. 3 East 1 Mile, South Bank then North 1 Mile Both Banks to White Blvd., Remove Exotics, Damaged Trees, Trees on Slopes, Approx. 3 Miles	$150,000
2006	Golden Gate Main Canal, East Bank from C-1 Connector to Golden Gate No. 4, Remove Exotics, Damaged Trees, Trees on Slopes, Approx. 2 Miles	$100,000

Figure 4
Tree Removal Projects By Year



7. Local Government Assistance/Cooperation Projects

This Initiative was started in 1986 to lend support and guidance to local governments in dealing with water and environmental resource issues. The program was expanded during FY 1995 to offer technical and financial assistance to provide local governments and public agencies with the best available data to integrate land use and water resource decision making. This program has now been expanded to include private water utilities so the residents of the Basin at large can benefit from this effort.

Cooperative funding program applications are solicited during the first quarter of the fiscal year. Funding is available for one fiscal year, with the grant requiring a 50 percent cost share by the agency receiving the grant. Projects receiving grants are eligible to reapply for project expansions in later years.

Criteria for ranking the projects includes:

1. How the project will help achieve the Basin's mission elements of water supply, water quality, environmental enhancement and flood control.
2. Regional benefits of the project.
3. How the project complies with the Basin's short- and long-range plans and programs.
4. Potential benefits and risks involved if the project is not undertaken.
5. Whether the project is ready to start immediately or still in planning stages.

The following projects are being currently funded under the Basin's Cooperative Water Resources Projects funding program for FY 2001 with local governments, state and federal agencies and private water supply utilities.

	Project	Agency
1.	Adopt-a-canal	Keep Collier Beautiful
2.	Reuse irrigation connection George Washington Carver Apartment	City of Naples
3.	BCB Regional Research And Monitoring Database	Florida Marine Research Institute
4.	Wastewater Effluent Reuse	Everglades City
5.	Drainage and Waterway Improvement	City of Marco Island
6.	Effluent Reuse Connection	Port of the Islands CID
7.	Marco Shores Reclaimed Water Use	Florida Water Services Corp.
8.	Marco Lakes/Henderson Creek Water Control Structure	Florida Water Services Corp.
9.	Gateway Triangle Stormwater Facility Improvement	Collier County
10.	BCB Mobile Irrigation Lab	Collier Soil and Water Conservation District
11.	Wildlife Survey for SGGE	Florida Division of Forestry
12.	Status of Sheet Flow in BCB	National Park Service

The Basin Board has allocated a sum of $500,000 in the FY 2002 budget for this cooperative funding program. Ten projects have been tentatively selected for funding. This program has been very useful in implementing many local projects, and fostering productive partnership with local governments and communities. It is recommedned that this program be continued in this cycle of five-year planning efforts.

Future Projects

Future projects of the Local Government Assistance/Cooperative Water Resources program will be identified by applications solicited from local governments and public water supply utilities. However, the Basin has been pursuing implementation of the following two local water conservation programs for several years. Efforts will be made to make these two projects a priority with the cooperation of the City of Naples and Collier County. An additional goal is the dissemination of resource data to utilities and government agencies.

A. **City of Naples Water Conservation Plan:** The City of Naples has requested the Basin's help with information to develop a water conservation plan. Naples has successfully implemented recycled wastewater irrigation practices. The new plan should include other demand management strategies, daytime irrigation bans, requirements for low flow plumbing fixtures in new facilities, Xeriscape landscape codes, conservation rate structures, and public education programs.

B. **Collier County Water Conservation Plan:** The Basin is urging the Board of Collier County Commissioners to establish a water conservation plan for the County. The plan will include demand management strategies, daytime irrigation bans, requirements for low flow plumbing fixtures in new facilities, Xeriscape landscape codes, conservation rate structures, and public education programs. The Board of County Commissioners rejected several earlier considerations for implementation of daytime watering restrictions. We hope the Board of County Commissioners follows the example of numerous south Florida communities to restrict non-commercial daytime landscape irrigation to conserve our precious water resources.

8. Water Conservation Education/Public Awareness Programs

The Basin has undertaken a variety of comprehensive programs to help educate the public about the water and environmental resources of the area and promote water conservation measures by every citizen. Due to the rapid growth in Collier County, concerns over the water supplies of the region mandate greater efforts to educate the public about water supplies and the need for changing water use habits. The Basin, as the local arm of the District, coordinates the program in the Collier County area.

Existing Programs:

The following are some of the major programs about water and environmental education, and public outreach activities presently carried out by the Basin.

A. Speaker's Bureau: Staff and Board Members are available for public speaking and to present a slide presentation on local issues to various community groups, organizations or agencies. This slide show will be updated during FY02. A power point version of the show will be created in FY02.

B. Home Page: A detailed BCB Home Page, describing the organization and activities of the Basin, has been created as part of the District website. The site is available at http://141.232.1.11/organ/2_bcb.html, allowing information to be available to the public at any time. The page is continuously undergoing updates to present the most current information to the public. The District website address is being added to all informational handouts available to the public in order to increase awareness of the site.

C. BCB Express Newsletter: A monthly newsletter is sent to Basin Board members, local government officials and homeowner association presidents. The newsletter is also available on the BCB website. The newsletter updates Basin projects,

capital construction projects, items of interest about water resource issues, storm event data, and other important water resource information. BCB Express is now available on the website and mailed to homeowner association presidents.

D. **Melanie the Manatee Mascot:** Melanie the Manatee was chosen as the Basin mascot following a student art contest during the 1996-97 school year. Melanie is available, through a character costume, to visit local events and school presentations dealing with water resource efforts. Her image and water conservation tips are available on a number of educational items available to the public. Student book covers feature the first place poems and stories written about Melanie by 3rd and 4th grade students during a 1998-99 school year writing contest.

E. **Wetlands Tabletop Model:** A model that mimics the environmental landscape of Collier County is one of our newest educational tools. The model is used to explain the role and importance of wetlands to the environment. It also helps explain difficult surface and groundwater concepts with a visual hands-on format that can be used for children or adult presentations. Basin staff will present the model to civic or school groups and will loan the model on request. Basin staff will work with staff from the Fort Myers Service Center to create a training program for teachers and other environmental agencies that wish to use the model. The program will be available in FY02.

F. **Big Cypress Basin Video:** A video discussing the Basin history and programs is now available. Copies will be available at the Basin office, government access Channel 54, public libraries and schools. Basin staff will use it for presentations to local governing bodies, public agencies and civic or school groups.

G. Brochures: A number of BCB and SFWMD brochures are available, including an *Operation Schedule of Water Control Structures* that includes a description of the when gates are opened and closed and at what elevations they are set. The BCB *Facts and Figures* brochure gives a brief overview and history of the Basin. The BCB brochures are updated annually or more often as new information becomes available.

H. Satellite Photography: The Basin provides updated satellite posters of South Florida and the Basin to all public and private schools, as well as members of the public. They are excellent teaching tools used to describe the water resources in Collier County. The poster will be updated with new satellite imagery during FY02.

I. Adopt A Canal Program: The Basin has started the first Adopt A Canal Program in the state in conjunction with Keep Collier Beautiful. A number of neighborhood groups have expressed an interest in cleaning the canal banks of trash and debris. Keep Collier Beautiful is actively recruiting groups and expects two or three groups to start this program in the Golden Gate area canals during FY01. The program should expand to cover at least four canals by FY05. The Basin will provide recognition signs for the groups on the canal being adopted.

J. Participation in Local Events: Basin staff actively participates in booths at local special events, fostering community outreach of its programs and activities. The annual Collier County Fair has provided an opportunity for direct public one on one interaction. The Basin was fortunate to be one of the first environmental booths at the Collier Seminole State Park Native American and Pioneer Heritage Festival and continues to participate in this event. The Basin also helps to coordinate and participate in local and regional water festivals and water symposiums.

K. **Melanie Award Program:** In order to recognize housing developments, government or private agencies, schools or individuals who directly impact water resources proactively, a new Melanie the Manatee Award was designed during FY99. The manatee shaped plaque is based on the original drawing of Melanie from the student art contest. So far, two winners have been announced with the winner's name and date engraved on a brass plate attached to the wooden base.

L. **Collier Environmental Education Consortium:** Known as CEEC, the consortium is a collection of public and private agencies involved in environmental education. CEEC plays a coordinating role for public and private schools to better communicate and disseminate environmental education materials. Basin staff continues to serve on the CEEC board and provides water resource oriented support. The Basin Board continues to provide funds for the Environmental School Awards (ESA), a CEEC sponsored program that rewards schools for environmental school programs. Schools applying for ESA must meet criteria including programs on water conservation, recycling and other conservation measures, soil surveys and environmentally friendly gardens, environmental field trips and in class speakers, Earth Day celebrations and environmentally based community service projects. Award criteria are updated each year.

M. **Water Quality Testing Kits:** The Basin provides water quality testing kits to local schools, including middle and high schools and Edison Community College. The kits are used for testing local surface waters and the results are provided to the Collier County Pollution Control Department for incorporation in their database. This program allows the students to deal directly with real time data.

N. **School Field Trips:** The Basin provides curriculum information and partial funding for Collier County Public School 6th grade class field trips to Everglades National Park or Big Cypress National Preserve. Both trips discuss the local environment and wildlife habitats as well as water resource issues. An 8th grade trip is also available to Lake Trafford to study the lake restoration project.

O. **School Programs:** Staff provides schools free water resource presentations to public and private schools. The third grade classes all can receive the *Water: Sharing the Resource* program on the importance of water. Middle and High school programs can be tailored to the classes and presentations are available on the Restudy, Wetlands, and other water resource issues.

P. **Science Fair Judging:** Staff annually participate as judges at the regional science fair, as well as manning a water resources booth at Super Science Saturday when the science fair winners are announced. Judging involves evaluating engineering and/or environmental entries and communicating with the students who entered the fair. Basin staff also act as judges at individual school science fairs at both the middle and high school levels.

Q. **Minority Outreach:** Consultants hired by the District are working with Basin Staff and Board Members to increase the outreach efforts to minority communities within the Basin boundaries.

R. **Summer Camp Programs:** Presentations have been available since 1998 to summer camp programs wishing speakers. The number of presentations has increased, including presentations at other school holiday camps.

S. **Know the Flow Program:** The very successful Know the Flow program, aimed at Homeowner Associations, teaches homeowners how to keep their neighborhoods systems free of debris and ready to convey storm water out of the neighborhood. In order to reach more homeowners starting in FY02, the program will be included in the master gardener lecture series sponsored by the Collier County Extension Service.

T. **Contests:** Student contests have been held to create Melanie the Manatee, the Basin mascot and create a history for her. Now the Basin has started public essay contests on water conservation. An essay contest for school age and adult participants is planned for FY02.

Future Programs

In addition to the previously mentioned active programs, the Basin is currently working on additional public outreach and water resource/environmental programs to provide for and disseminate information to local governing bodies, public agencies and the public at large. A summary of the proposed public outreach initiatives in the next 5-year planning cycle is outlined in Table 11.

A. Daytime Watering Ban: To promote water conservation, especially pertaining to irrigation water use, an ongoing effort is underway to have Collier County institute a daytime irrigation ban between the hours of 9AM and 5PM. This proposal has been taken to the Collier County Commissioners before, but not adopted. Collier is one of two counties without the ban in the 16 counties covered by the South Florida Water Management District.

B. Permanent Display on Water Resource Issues: The Basin is discussing display space with other environmental education agencies who have centers that are open to the public. Until then, the Basin has a display at the main branch of the public library.

C. Informational Poster: A large, full color poster explaining the history and major programs of the Basin is in production and will be available during FY02.

D. Restoration Projects: The District is the local government agency working with the US Army Corps of Engineers on the Comprehensive Everglades Restoration Plan (CERP), Feasibility Study of South Florida and the Environmental Impact Statement projects. These projects will help protect and restore the south Florida ecosystem while providing a better quality of life for the people of south Florida by

insuring an adequate water supply for both human and wildlife inhabitants. The Basin is involved in three local restoration projects, which tie into CERP. Basin staff will be available to explain the projects as part of the speaker's bureau or school presentation programs. A display explaining local involvement and benefits will be available in FY03.

Table 11

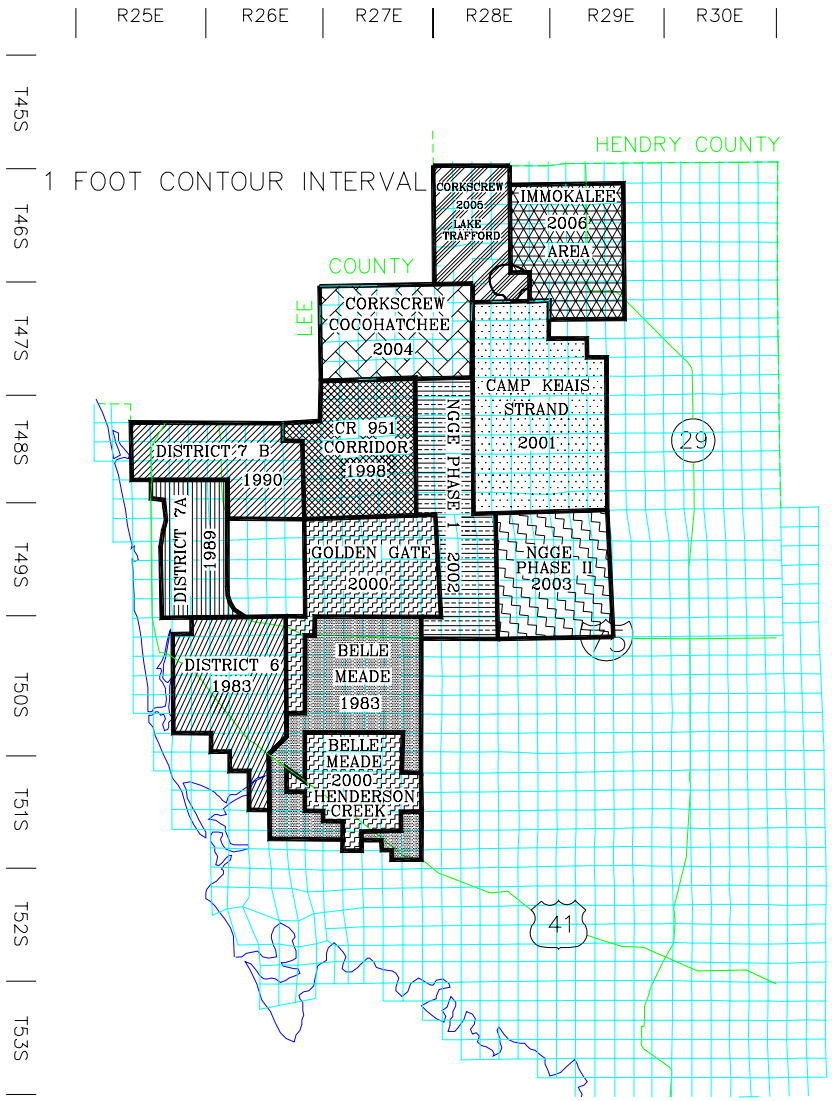
Public Outreach Initiatives Five Year Summary

Activity	FY00	FY01	FY02	FY03	FY04
Speaker's Bureau	Update slide show	X	Create powerpoint show	X	Update powerpoint show
Home Page	Intern requested, update graphics, add pages	Update educational materials, links	X	X	X
BCB Express Newsletter	Add to BCB website	X	X	X	X
Melanie Mascot character costume available	X	X	X	Create a skit for earth day or school presentations	X
Wetlands Model available	X	X	Teacher training program available	X	X
Brochures	X	X	Create a history of Melanie	X	X
Satellite Photography for schools or public	X	X	X	Updated satellite image available	X
Participation in Local Events	X	X	X	X	X
Newspaper columns	First columns appear in The Floridian - take copies to NDN and other local papers	X	X	X	X
CEEC	X	X	X	X	X
Water Quality Testing Kits	X	X	X	X	X
6th Grade Field Trips	First year for BCNP trips	X	X	X	X

Activity	FY00	FY01	FY02	FY03	FY04
School Programs	X	X	X	High School Program available with emphasis on FCAT Strategies	X
Science Fair	X	X	X	X	X
Daytime Watering Ban	Help Collier County and Naples create water conservation plans	X	X	X	X
BCB Video Available	X	X	X	X	X
Xeriscape Guides Available	X	X	X	X	X
Display	Start talks on adding a display at environmental centers				Display available at new environmental education centers
Minority Outreach	Work with consultants to increase outreach by 10%.	Expand outreach program	Expand outreach program	Expand outreach program	Expand outreach program
Summer Camps	Formalize agreement with Naples Summer Camp program	Increase presentations by 5%	Increase presentations by 5%	Increase presentations by 5%	Increase presentations by 5%
Adopt-A-Canal Program	Criteria for adoption written	First canal adopted by 2 groups	Increase to 4 groups	Increase to 6 groups	Increase to 8 groups
Melanie Award	Award criteria written, first awards ceremony	X	X	X	X
Know the Flow	Lecture series starts	Know the Flow article available	Professional program available	X	X
Informational Poster	Full color poster available to the public	X	X	Poster updates on restoration projects	X
Restoration Projects	Public display available	X	Update display	X	Update display
Public Contests		Contest held		Contest held	

X continuing program

BCB/COLLIER COUNTY
AERIAL PHOTOGRAMMETRIC TOPOGRAPHIC MAPPING PROJECTS



APPENDIX "A"

Appendix A